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State of Connecticut

REPORT

OF THE

STATE BOARD OF HEALTH

FOR THE YEARS 1913-1914

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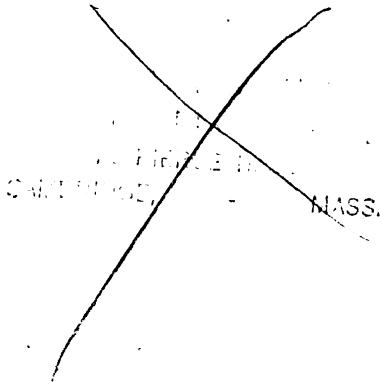

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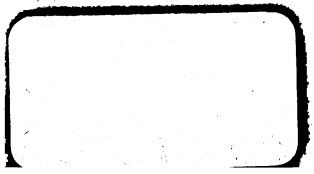

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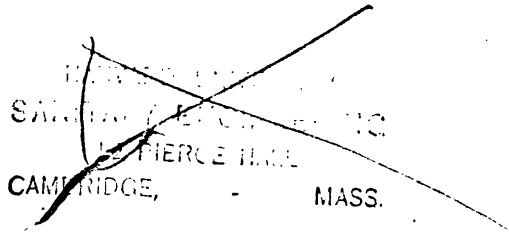

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State of Connecticut
PUBLIC DOCUMENT No. 25

THIRTY-THIRD REPORT
(FOURTH BIENNIAL)

OF THE

State of Board of Health

OF THE

State of Connecticut

For the Two Years ended September 30, 1914

PRINTED IN COMPLIANCE WITH STATUTE

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1915

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MEMBERS OF THE BOARD

ALBERT W. PHILLIPS, M. D., Derby, ... 1915
LOUIS J. PONS, M. D., Milford, ... 1915
EDWARD K. ROOT, M. D., Hartford, President, . . 1917
LEWIS SPERRY, Attorney-at-Law, South Windsor, . 1917
ARTHUR J. WOLFF, M. D., Hartford, ... 1919
J. FREDERICK JACKSON, Civil Engineer, Hamden, . 1919
JOSEPH H. TOWNSEND, M. D., Secretary, New Haven.
Executive Office, State Capitol, Hartford.

State Superintendent of Registration of Vital Statistics.

DR. J. H. TOWNSEND, Secretary of the Board.

LABORATORY OF THE BOARD.

WESLEYAN UNIVERSITY CAMPUS, MIDDLETOWN.

PROF. HERBERT W. CONN, PH. D.

Bacteriologist and Director.

Sanitary Inspector,
GEORGE C. HAM, PH. B., Civil Engineer, Naugatuck.

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State of Connecticut

OFFICE OF THE STATE BOARD OF HEALTH,

CAPITOL, HARTFORD, Dec. 23, 1914.

To His Excellency, SIMEON E. BALDWIN, *Governor of Connecticut:*

SIR:—In compliance with the laws of the State, I have the honor to present to you the Thirty-third Report of the State Board of Health, for the two years ended September 30, 1914.

Very Respectfully,

JOSEPH H. TOWNSEND, M. D.,

Secretary.

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INDEX

	Page
Analysis of Water	169
Antitoxins, Free Distribution of	8
Apoplexy for thirty-four years	47
Bacteriological Laboratory, Report of	116
Barber Shops, Sanitary Regulations of	52
Berlin, Report of the Health Officer for 1913	94
Bottling and Sale of Drinking Water	54
Branford, Report of Health Officer for 1914	112
Bright's Disease for thirty-four years	48
Bristol, Inspection of Cedar Swamp Reservoir	69
Cancer for thirty-four years	49
Cerebro-spinal Fever	43
Complement Fixation Tests	136
Conference of State Health Officials	49
Consumption	36, 37
Contagious Abortion of Cattle	146
County and Town Health Officers, List of	207
County Health Officers' Reports	72
Deaths Among Children	44, 45, 46
Diphtheria	38, 123
Election, Officers of the Board	19, 28
Embalmers, Licensing of	51
Enfield, Abstract from Report of Health Officer	113
Examining Boards of Medical Societies	216
Fairfield, Report of Health Officer for 1914	99
General Report	7
Glanders	131
Greenwich, Abstract from Report of Health Officer	114
Health of the State	32
Health Officers, List of	207
Hypochlorite Treatment for Public Water Supply	61
Illuminating Oils, Tests on	206
Infantile Paralysis	43
Investigation of Water Supplies	162

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	Page
Lakeville, Sewage Disposal at School for Imbeciles	114
Leprosy	43
Local Health Officers' Annual Reports	94
Manchester, Report of Health Officer for 1914	97
Mansfield, Report of Health Officer for 1914	105
Measles	42
Medical Inspection of Schools	9
Meetings of the Board	15
Midwives, List of	221
Milk Examinations	147
Naugatuck, Report of Health Officer for 1914	108
New Britain, Report of Health Officer for 1914	100
New Canaan, Report of Health Officer for 1914	101
New Haven, Report of Health Officer for 1913	96
Optometry, Report of Examiners	51
Orange, Abstract from Report of Health Officer	110
Pellagra	44
Plainfield, Report of Health Officer for 1914	106
Plainfield, Report on Sanitary Inspection	63
Pneumonia	35
Pollution of Streams	11
Public Health Legislation in 1913	225
Rabies	43, 130
Registered Practitioners, List of	217
Reports of County Health Officers	72
Report of Director of State Laboratory	116
Scarlet Fever	41
Sebethe River, Killing of Fish in	67
Secretary's Report	15
Smallpox	42
Smallpox in Montville	115
Southington, Report of Health Officer for 1914	103
Special Reports and Advice	60
Stamford, Sewer Inspection in	68
Swimming Pools, Testing of	204
Thompsonville, Report on Additional Water Supply	61, 67
Treasurer's Report	222
Tuberculosis	36, 37, 122
Typhoid Fever	40, 129
Typhoid Fever, Investigation at Seymour	64
Vaccination	10
Wasserman Test for Syphilis	133
Water Supplies, Examination of	162
Waterbury, Abstract from Report of Health Officer	111
West Hartford, Report of Health Officer for 1914	104
Willimantic, The Harvesting of Ice from Reservoir	65

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GENERAL REPORT

To His Excellency, Simeon E. Baldwin, Governor of Connecticut:

SIR:—The State Board of Health herewith presents its thirty-third report, which is the fourth biennial report, relative to its operations for the fiscal period ending September 30, 1914, with some recommendations whereby it believes its usefulness to the state can be increased.

There has been one change in the personnel of the Board since the publication of the last report. The term of service of Mr. Theodore H. McKenzie, of Southington, expired in July, 1913, and you appointed Mr. J. Frederick Jackson, of Hamden, to succeed him. Mr. McKenzie was the oldest member of the Board in point of service, having been a member since 1893. The officers of the Board have remained the same.

The eight regular quarterly meetings required by law have been held and five special meetings. The minutes of these meetings given elsewhere set forth fully the business transacted. These meetings have all been well attended; there was always a quorum present and many times the entire Board.

The monthly bulletin after twenty-seven years of continuous publication appeared in new form with the January, 1914, issue. This makes it more convenient to handle and admits of necessary enlargement to meet the increasing demand for public health education. It is sent to all health officers and other citizens of the state wishing it, and gains a wide reading through the public press which quotes from it freely.

Our correspondence increases from year to year and relates to inquiries regarding public hygiene, the health laws of the state, the Medical Practice Act, and to the collection of vital statistics as well as information sought from these statistics.

The Board has endeavored to arouse an interest in matters pertaining to the public health and to improve sanitary conditions in the state, so far as the law and our appropriations enable us to do. There has consequently been an increasing

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demand for information and advice from local health officers and the general public. The Secretary or a committee of the Board has responded to these calls and visits have been made to various parts of the state for consultations regarding public water supplies, sewage disposal, the diagnosis and control of infectious diseases and various unsanitary conditions.

Special bulletins are supplied regarding the common infectious diseases, also on such subjects as the care of infants, the house fly, milk production, etc. One direction in which there is need of more effective work is in the fulfillment of this educational duty, and an appeal will be made to the Legislature for funds to carry on this important work.

THE LABORATORY.

The State Laboratory has continued to do valuable work as will be seen by reference to the report of the Director. The specimens sent in for examination have increased yearly. The new work undertaken during the past two years has included the Wasserman test for syphilis and the test for contagious abortion in cattle. The investigation of the pollution of streams ordered by the last Legislature has also increased the work of the Laboratory during the past summer and fall.

VITAL STATISTICS.

In the Bureau of Vital Statistics the same careful and accurate work has been done as has characterized this department in former years. All supplies for collecting and preserving these records are furnished the local registrars from the appropriation to this Board. About sixty thousand records of births, marriages and deaths were received and filed in our office during the last year and this number will of course increase each year. These records are accumulating so rapidly that our office space has about reached the limit of caring for them. It will therefore soon be necessary to secure additional room for this purpose. A special stack room should be provided with fireproof cases and ample provisions for additions for years to come, where these card records can be permanently filed and at the same time be accessible for reference.

THE FREE DISTRIBUTION OF ANTITOXINS.

The distribution of diphtheria and tetanus antitoxins begun in 1911 has continued during the past two years. The contract for furnishing these during the years 1913 and 1914 was

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awarded to the Lederle Laboratories of New York and the distribution made direct from the office of the Board instead of through the drug trade as formerly. By this method, which has given better satisfaction, a supply is furnished each local health officer to whom physicians apply as the antitoxin is needed. During the past year we have distributed nearly seven thousand packages or about twenty million units of antitoxin. This distribution, we believe, has been of great benefit, as the prompt use of antitoxin is necessary for the successful treatment of diphtheria, and the retail price is so high as to prohibit its use in many cases. A public distribution is necessary that it may be used not only promptly but freely in order to obtain the best results. At the last session of the Legislature we asked that the present law requiring an unrestricted distribution be amended so as to limit it to the indigent, and to allow the Board to make any necessary rules and regulations regarding its use. This, however, did not meet the approval of the Legislature and as it is therefore the policy of the state to furnish this antitoxin to everybody irrespective of their financial needs, the appropriation should be large enough to cover the expense of purchase, so that we will not be obliged, as we have been, to discontinue the distribution from lack of funds before a new appropriation becomes available.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

Under the medical inspection law, which is permissive only, systematic supervision of the health of school children, more or less complete, has been established in most of the city schools and in many towns throughout the state. The reports from these cities and towns as a rule show excellent results and state that there has been less sickness with a larger percentage of attendance, cleaner children, and the children do better work. Medical inspection has grown up for the purpose of detecting cases of contagious diseases and for the purpose of segregating such cases for the protection of other children. But it has not stopped here; other problems have forced themselves on the attention of the inspectors. Pupils have been unable to keep up with their classes. Inquiries and physical examination of these cases by school doctors have revealed a surprising number of children, who through defective eyesight, hearing, and other causes, have been severely handicapped in their school work. Thus medical inspection has been developed, not only for the detection of contagious diseases, but for detecting defects which interfere with a child's ability to do its school work, or which, if

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neglected, will seriously affect his physical efficiency in after life.

That medical inspection should be compulsory is questioned by some who think it a foolish expenditure of money, for which the citizen should not be taxed, also that it interferes with parental rights and duties, but such objections will not bear scrutiny. The authority, which has the right to compel attendance at school, has the added responsibility of seeing that no harm comes to those going there, and humanity requires that medical assistance be given children who may suffer through the ignorance or neglect of their parents. Medical inspection is not perhaps so great a necessity in the smaller towns, but we believe that the present law should be amended so as to make it obligatory in all towns of more than five thousand population.

VACCINATION.

The protective power of vaccination has been established by the strongest evidence from all parts of the civilized world, still there are those who oppose it on the ground that it has no value as a preventive measure, that it is harmful to those who undergo the operation and that compulsory vaccination is an infringement on the rights of the individual. The anti-vaccinationists have been very active for several years endeavoring to secure the repeal of the vaccination laws, but so far without success. It is probable that the same attempt will be made at the present session of the Legislature. The so-called vaccination laws are: First, that which allows boards of education or school committees to require children to be vaccinated before attending a public school under their jurisdiction. Second, a statute which authorizes boards of health and health officers to "adopt such measures for the general vaccination of the inhabitants of their respective towns as they shall deem proper and necessary to prevent the introduction or arrest the spread of smallpox"; and Third, a statute which provides a penalty of five dollars for refusal to comply with the law, but any one can escape the penalty or the vaccination by presenting a physician's certificate that vaccination would not be advisable, owing to ill health. These laws are not severe and are in marked contrast to the compulsory vaccination laws of Germany, which provide that a child shall be vaccinated in infancy and again at the age of twelve.

We believe that any change in the vaccination laws at this time would be unfortunate. Smallpox has been very prevalent throughout the country during the past few years, although in mild form, and Connecticut has not escaped.

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Willimantic, Naugatuck and Hartford have had epidemics which have cost these cities thousands of dollars.

Smallpox is a loathsome and disfiguring disease. Before the discovery of Jenner in 1796, it was considered a disease of childhood because few children reached adult age without having had the disease. Vaccination is an almost certain preventive of smallpox and the accidents that sometimes result are so rare as to be incomparable with the benefits to the community that are derived from this great discovery.

THE POLLUTION OF STREAMS.

Two things of primary importance to the health interest of any community are a pure water supply and a proper disposal of sewage. The question of stream pollution has been given much attention in recent years by this Board, and bills having for their object the relief of this condition were presented without success to the Legislatures of 1911 and 1913. The last Legislature did, however, pass an act directing the Board to investigate the subject and "recommend to the next General Assembly such legislation as will lead to the termination of all such pollution." This report has been prepared and will be presented to the incoming Legislature.

Our State is well supplied with lakes and streams, and as it is apparent that they are valuable assets they should be carefully guarded, but as the population becomes more dense and varied industries multiply, the protection of our streams becomes more complicated. The pollution consists usually of domestic sewage, organic refuse of all kinds, and various trade wastes. On account of it the water is rendered unfit for human use, live stock refuse to drink it and fish, if not killed, are driven to more desirable sections.

As to the effect on live stock, as a result of this pollution, it is obvious, if the pollution is extreme and the organic matter highly putrescible, cattle will not drink the water at all, but if pollution is slight the water will be used. There is evidence that certain intestinal disorders in animals are caused by drinking polluted water. The general health of the animal is affected although no definite disease results.

Particularly are trade waste detrimental to fish life. In many instances they are killed within a short time where large amounts of waste are discharged, or, if the pollution is more gradual, they will be completely driven out in time. The damage to human health from eating fish from polluted streams is, of course, slight, owing to the fact that fish are usually well cooked. This is not the case with oysters, clams and other shell fish, which, under no circumstances, should be used for food when taken from sewage polluted waters.

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This last is a matter in which the State of Connecticut is especially interested, as oyster culture is carried on here on a large scale and with an intelligence and enterprise exceeding that shown in any other State. Its promotion and protection should therefore be encouraged.

All this discussion emphasizes the necessity of adopting some general method for the protection of our streams to make them fit for human and animal use. They should be conserved just as we conserve our other natural resources. Cities and villages should be required by law to cease discharging sewage and other wastes into our water courses without giving them proper treatment to prevent the creation of nuisances. Some of our rivers and harbors have already reached the limit of sewage pollution, so that sooner or later, some method of disposal will have to be adopted by the cities and towns responsible for it. This will be more difficult and expensive the longer it is delayed.

That the State Board of Health should have power to protect public water supplies from dangerous contamination and to regulate the disposal of sewage is now generally recognized among men, who have given the problem consideration, and the laws of California, Indiana, Kansas, Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Vermont and Wisconsin, most of which laws have been enacted within the past ten years, are based upon this principle. Massachusetts was the first state in this country to consider seriously the problem of water purification and sewage disposal, and the first to clothe its state board of health with power to deal with these problems. Other states attacked these problems through special commission, by the enactment of specific legislation to apply under particular conditions, and by the enactment of general laws, but with only indifferent success, and the present trend of legislation, as indicated by the laws of the above mentioned states, shows that the logical outcome of all these experiments is to place the power in the hands of the state board, whose duty it is, primarily, to protect the health interests of the state.

NEW HEALTH LEGISLATION.

The act, creating the State Board of Health, commands that in its report to the Governor it shall make such suggestions for further legislative action as it may deem proper for the better protection of life and health. In accordance with this we have to suggest that an amendment be made to the present health laws. The State Board of Health is now the State Bureau of Vital Statistics, maintains a laboratory for

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the use of physicians and others, distributes antitoxins through the local health officers, is a bureau of registration for physicians and midwives, and has authority to make various investigations of a sanitary nature; otherwise its duties are solely advisory. It has no authority over local health officers and no power to remedy any unsanitary condition, or promulgate any regulations in the interest of the public health.

The close relationship of towns, the intimate intercourse of their people by reason of modern facilities for rapid transit, produces in every town a direct interest in other towns and other towns, in like manner, have an interest in it. This demands, in local matters, some central supervision with authority and local administration with responsibility. The most casual observer cannot fail to notice the increasing interest in health matters. The people of the State are now fully awake to the value and necessity of sanitary reforms and are demanding from the state health organization and from local boards and health officers more effective action along many lines. A popular impression prevails in some quarters that the State Board of Health has almost unlimited powers in matters relating to health and comfort, but as already stated, such is not the case. Sufficient authority should be given it to protect the public health as the people have the right to expect.

Compared with other states our health system is unique, in that we have lawyers as county health officers, who are the supreme sanitary authority. They appoint the town health officers and to them appeals may be made from the decision of a local health officer. Their work as prosecutors for violations of the health laws and the orders of the town health officers has resulted in an enforcement of the law, such as is seen in few states, but they are not sanitarians and there is a public sentiment that health officials measure up to certain standards. We believe that it would be wise to continue the present county officials as special prosecutors in health matters and to transfer their sanitary duties to a corps of district inspectors. These district inspectors should be physicians and sanitarians, appointed by and responsible to the State Board of Health. They should give their full time to the work, not to supercede the town health officers, but to supervise and work with them. This system of district inspectors would be similar to the method employed in New York and Massachusetts; and finally the State Board should have the power to make and promulgate a sanitary code for the use of the state. This would be the same as the authority now given some city boards of health to make health regulations governing their cities.

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CO-OPERATION WITH OTHER DEPARTMENTS.

We would express our appreciation of the courtesy and co-operation of the health officials throughout the State, and of other state departments engaged in work allied to ours. The health board of the present day is concerned not alone with the control of epidemic diseases, but with all the varied activities having to do with the prevention of disease and the saving of human life. The sanitation of factories, occupational diseases, diseases of animals, the food supply, and the care of the unfortunates in our State institutions, these and many other matters affecting the public health are subjects calling for investigation and action by the health department. There should therefore be co-operation between all departments in any way charged with duties affecting the health of the public and the State Board of Health at all times invites such co-operation.

The reports of the County Health Officers and the detailed operations of this Board and its Laboratory will be found on the subsequent pages of this volume. The report of the Bureau of Vital Statistics is an annual report and is published separately.

Respectfully submitted,

EDWARD K. ROOT, *President,*
ALBERT W. PHILLIPS,
LEWIS SPERRY,
ARTHUR J. WOLFF,
LOUIS J. PONS,
J. FREDERICK JACKSON,
JOSEPH H. TOWNSEND, *Secretary.*

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SECRETARY'S REPORT

MEETINGS OF THE BOARD

HARTFORD, CONN., Nov. 20, 1912.

A special meeting of the State Board of Health was held on Wednesday evening, November 20, 1912. The purpose of the meeting was to consider the estimates of money to be asked of the Legislature for the uses of the Board for the next two years, and to transact any other business that might properly be brought before the meeting.

The meeting was called to order by the President, Dr. E. K. Root. There were present Dr. E. K. Root, Mr. T. H. McKenzie, Mr. Lewis Sperry, Dr. A. J. Wolff, Dr. A. J. Phillips, and the Secretary.

The Secretary of the Board and the Director of the Laboratory were heard regarding the needs of their respective departments. The Board then went into executive session and after discussion it was voted: To ask the Legislature for $47,000, divided as follows:

General expenses of the Board.....	$13,000
Bacteriological and Chemical work.....	18,000
Purchase of Antitoxins.....	10,000
Salary of Secretary	6,000

It was voted: That Dr. Root, Mr. Sperry and the Secretary be appointed a Legislative Committee to have charge of the Legislative business of the Board at the coming session.

It was also voted: That Dr. Root and the Secretary be appointed a committee on publication for the preparation of the biennial report of the Board.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

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HARTFORD, CONN., January 21, 1913.

The regular quarterly meeting of the State Board of Health was held at the Capitol on Tuesday evening, January 21, 1913.

The meeting was called to order at 7:05 p. m. by the President, Dr. E. K. Root. There were present Dr. E. K. Root, Mr. T. H. McKenzie, Dr. A. W. Phillips, Mr. Lewis Sperry, Dr. A. J. Wolff and the Secretary.

The minutes of the last quarterly meeting and of a special meeting were read and approved.

The Treasurer's report was made, accepted and ordered on file.

The Secretary's report gave a summary of his work for the quarter, telling of visits to Beacon Falls, Meriden, and two visits to Stamford.

Prof. Conn, the Bacteriologist of the Board, told of the work of his laboratory for the quarter and reported the usual increase in the number of specimens received for examination.

Mr. Newlands, the Chemist of the Board, reported that 161 samples of water, sewage and oil had been examined. He had completed the sanitary survey of the Guilford, Southington, and South Manchester watersheds, leaving only Branford unfinished of the watersheds to be examined last season.

The following physicians nominated by the several medical societies were duly appointed on the Examining Boards:

Connecticut Medical Examining Board, Dr. John B. McCook.

Connecticut Homeopathic Medical Examining Board, Dr. Frederick E. Wilcox.

Connecticut Eclectic Medical Examining Board, Dr. Thomas S. Hodge.

Mr. McKenzie, chairman of the Committee on Water Supplies and Sewage, reported an inspection made in Stamford by himself and the Secretary, of a nuisance arising from a defective sewer which caused the sewage to overflow the manhole and set back into the cellars of some of the houses in the neighborhood. The report was accepted and a copy ordered sent to the Mayor of Stamford.

A communication from the Secretary of the American Medical Association suggesting the publication by that Association of information bulletins on health topics for the use of all State Boards of Health, was referred to the President and Secretary.

The Board next considered a bill concerning the pollution of streams and disposal of sewage which it was proposed to introduce in the Legislature. After discussion it was the opinion that the matter contained therein should be embodied

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in two bills, one relating to the protection of water supplies and the other to the disposal of sewage, and it was ordered that they be so redrafted.

On motion of Dr. Wolff it was voted to go into executive session, after which the meeting adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., March 11, 1913.

A special meeting of the State Board of Health was held at the Capitol on Tuesday evening, March 11, 1913. The purpose of this meeting was to consider measures of interest to the Board then pending in the Legislature.

The meeting was called to order at 7 p. m. by the President, Dr. E. K. Root.

There were present Dr. E. K. Root, Mr. T. H. McKenzie, Dr. A. W. Phillips, Dr. A. J. Wolff, Dr. L. J. Pons and the Secretary.

Various legislative bills were discussed, particularly those relating to the pollution of streams, and the protection of water supplies. It was the opinion of the Board that the so-called McDonough bill relating to the protection of water supplies was preferable to the others, inasmuch as it was more simple in its wording and had the additional advantage of being approved by the Governor.

There being no further business the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., April 22, 1913.

The regular quarterly meeting of the State Board of Health was held on Tuesday evening, April 22, 1913, at the Capitol.

The meeting was called to order at 7:05 p. m. by the President, Dr. E. K. Root.

There were present Dr. E. K. Root, Mr. T. H. McKenzie, Mr. Lewis Sperry, Dr. A. J. Wolff, Dr. L. J. Pons, and the Secretary.

The minutes of the last quarterly and one special meeting were read and approved.

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The report of the Treasurer was made, accepted and ordered on file.

The Secretary made a verbal report of his work for the quarter, telling of visits to Bridgeport, Enfield, Middletown, Glastonbury, Manchester, Simsbury, Naugatuck, Hadlyme and Meriden.

Prof. Conn reported on the work of the Laboratory for the quarter, stating that the work had been heavy, with a total of 3,913 specimens examined. The specimens received indicated that there was considerable malaria around the state, while rabies had disappeared. A number of specimens of ringworm had been examined from Middletown. Examinations of pus were quite common to determine what bacteria were concerned. There had been nine samples of watered milk received and one which contained formalin. The report of Prof. Conn was accepted.

Mr. Newlands, the Chemist of the Board, reported that his work had been largely routine. One hundred and twenty-three samples of water and sewage had been examined. In January he had completed work on the biennial report, and during February and March had worked on legislative bills and looked up the water and sewage legislation of other states. Mr. Newlands' report was accepted.

For the Legislative Committee Dr. Root reported that the Committee had looked over the various bills affecting public health, and, of the various bills relating to the protection of water supplies, was in favor of the so-called McDonough bill. The Committee had attended a hearing before the Committee on Appropriations regarding appropriations for the Board.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., July 8, 1913.

The regular quarterly meeting of the State Board of Health was held on Wednesday evening, July 8, 1913, at the Capitol.

The meeting was called to order at 7:05 p. m. by the President, Dr. E. K. Root.

There were present, Dr. E. K. Root, Dr. A. W. Phillips, Dr. A. J. Wolff, Dr. L. J. Pons, Mr. J. F. Jackson, and the secretary. Mr. Jackson being a newly appointed member, the oath of office was administered by Dr. Pons.

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HARVARD UNIVERSITY
SANITARY ENGINEERING
12 PIERCE HALL
CAMBRIDGE, MASS.

The minutes of the last quarterly meeting were read and approved.

The Treasurer's report was read, accepted, and ordered on file.

It being the annual meeting, the election of officers was next in order, and resulted as follows:

For President—Dr. Edward K. Root.

For Treasurer—Dr. Joseph H. Townsend.

Auditors—Mr. Lewis Sperry and Mr. J. Frederick Jackson.

Committee on Water Supplies and Sewage—Dr. Edward K. Root, Mr. J. Frederick Jackson and the Secretary.

Laboratory Committee—The Medical members of the Board.

Member of Board of Examiners of Embalmers—Dr. Joseph H. Townsend.

Director of the Laboratory—Prof. H. W. Conn.

Sanitary Inspector—Mr. George C. Ham.

Managers of County Homes—Dr. Edward K. Root, Hartford County; Dr. A. W. Phillips, New Haven County; Mr. J. F. Jackson, Fairfield County; Dr. J. H. Townsend, New London County; Dr. A. J. Wolff, Middlesex and Windham Counties; Dr. L. J. Pons, Litchfield County; Mr. Lewis Sperry, Tolland County.

The Secretary made his quarterly report in which he spoke of the increase in the work of the Department of Vital Statistics, and gave an account of personal visits to Shelton, Ansonia, Danbury, Rockville and Suffield.

Professor Conn, Director of the Laboratory, in his report for the quarter stated that Mr. Newlands, the chemist, and Mr. Mickle, assistant, had left the employ of the Laboratory, the latter somewhat unexpectedly. He had engaged two new assistants and the work was going on smoothly. There was in future to be no departments in the Laboratory but each man was to work where most needed. Prof. Conn said preparation was being made for the diagnosis of syphilis, and for this purpose his assistant, Mr. Story, had spent some days in New York looking up methods.

Attention was called to the meeting of the American Public Health Association to be held in Colorado Springs in September.

The reports of the Secretary and Director of the Laboratory were accepted.

The resignation of Mr. Newlands as chemist of the Board was read and accepted.

Recent legislation affecting the Board was considered and on motion it was voted, that a committee consisting of the President and two other members be appointed by the chair

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to fulfill the provision of Chapter 220, Public Acts 1913, relating to the pollution of streams and report to the Board before the assembling of the next Legislature.

In compliance with the provisions of the new optometry law, the Connecticut Optical Society sent in a list of nominations for the Connecticut State Board of Examiners in Optometry from which list this Board appointed the following gentlemen as members of the Optometry Board:

C. M. Parker of New Haven for three years; J. A. Masterton of Middletown and G. A. Comstock of Ansonia, each for two years; R. N. Johnquest of Stamford and W. S. Todd of Hartford, each for one year.

The new law concerning the bottling and sale of drinking water was next considered and on motion it was voted that Dr. Pons be a committee to inspect springs and bottling establishments in accordance with the provisions of Chapter 126, Public Acts of 1913.

On motion it was voted, that the Secretary and Prof. Conn be appointed delegates to the meeting of the American Public Health Association to be held in Colorado Springs, September 8-12, 1913.

On motion of Dr. Wolff it was voted, that the Secretary be instructed to secure an opinion from the Attorney General as to whether the Secretary of the Board is a member of the State Board of Health, and if he is, is he entitled to vote for officers of the Board at an annual meeting.

The Board next considered the awarding of the antitoxin contract for the next two years for which the Legislature appropriated $11,000. It was voted to hear any party present who wished to be heard on the subject, and Mr. J. L. Tiffany representing the Lederle Laboratories was introduced. Mr. Tiffany quoted prices and explained the method by which his firm would handle the contract if awarded to them.

On motion it was voted, that a committee of three be appointed by the President with power to award the antitoxin contract for the two years ending September 30, 1915. The President appointed as this committee Drs. Root, Wolff and Townsend.

There being no further business the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., October 9, 1913.

The regular quarterly meeting of the State Board of Health was held at the Capitol on Thursday, October 9, 1913.

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The meeting was called to order at 7 p. m. by the President, Dr. E. K. Root. All the members of the Board were present excepting Dr. Pons.

The minutes of the last quarterly meeting were read and approved.

The report of the Treasurer was made, accepted and ordered on file.

The Secretary made his quarterly report telling of the work regarding the licensing of spring water dealers, the vital statistics work of the office, and of visits he had made to Suffield, Stamford, Greenwich, Woodbridge and Plainfield.

Prof. Conn reported that the Laboratory was running smoothly, although with present assistants salary account was $500 per year less than formerly. The work of water analysis had been heavy during the summer, 168 samples having been examined. He made a report of his visit to Colorado Springs as delegate of the Board to meeting of the American Public Health Association. At this meeting he had been especially interested in the adoption by the Association of milk standards or grades of milk which health officers were urged to adopt as far as local conditions permit.

In answer to queries by Prof. Conn, it was the opinion of the Board that the announcement regarding Laboratory examinations for syphilis be made in the bulletin; in examinations for license to vend spring water, reports be sent only to the Secretary, and the question of taking on further examinations of public water supplies be referred to the Committee on Water Supplies. The reports of the Secretary and Prof. Conn were accepted.

Dr. Wolff stated that some time ago he had been appointed a member of a committee to recommend a satisfactory method of sewage disposal at summer colonies. He had made some investigations during the past two years. He found the so-called pan system frequently used; also some few vaults and cesspools. These resulted in the breeding of flies and maggots. He found on experiment that a mixture of kerosene and naphthalin with carbolic acid, three ounces of carbolic acid to one gallon of kerosene with a small amount of naphthalin, was effective in preventing the breeding of flies, a few ounces of the mixture being applied at a time. He made this as a report of progress. The report was accepted.

In response to a request from the trustees of the School for Imbeciles at Lakeville for advice regarding their sewage disposal plant, a committee consisting of Dr. Wolff, Mr. Jackson and the Secretary were appointed to visit the plant and make a report.

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In accordance with the provisions of the new midwifery law, the Board on nomination of the three State Medical Examining Boards appointed as members of the Midwifery Board: Dr. J. Francis Calef, of Middletown; Dr. E. C. M. Hall, of New Haven, and Dr. James E. Hair, of Bridgeport.

The committee appointed at the July meeting to award the antitoxin contract for two years from October 1st, reported that it had awarded the contract to the Lederle Laboratories of New York and that the distribution was to be made to the health officers from the office of the Board, instead of through the retail drug trade as formerly.

The President announced that it was contemplated to hold a State Conference of Health Officials early in the spring and to devote the meeting to a discussion of stream pollution with the following speakers:

Hon. Lewis Sperry—The legal aspects of pollution.
Mr. James A. Newlands—Pollution by factory wastes.
Mr. J. Frederick Jackson—Engineering aspects.
Mr. E. Hart Fenn—Economic aspects of pollution on fish and oysters.

The report of the President was accepted.

There being no further business the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., January 16, 1914.

The regular quarterly meeting of the State Board of Health was held on Friday, January 16, 1914, at the Capitol.

The meeting was called to order at 4 p. m. by the President, Dr. E. K. Root.

There were present Drs. Root, Phillips, Wolff, Pons, Mr. Jackson and the Secretary.

The minutes of the last quarterly meeting were read and accepted.

It was voted to change the usual order of business and hear parties present from Manchester regarding sanitary regulations submitted for the Board's approval by the Board of Health of Manchester. Those present from Manchester were the Health Officer, Dr. D. C. Y. Moore, Selectman Rogers, H. O. Bowers, Secretary of the Town School Board, and Attorney C. R. Hatheway, representing the Ninth School District.

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The only opposition was from the Ninth School District to Rule 5 requiring that children excluded from school because afflicted with lice, or having sore throat, must have certificate from the Health Officer before returning to school.

After hearing all persons interested the hearing was closed.

The report of the Treasurer was made, accepted and ordered on file.

The Secretary reported a busy quarter, for in addition to the regular routine work of the office he had made twenty visits to various towns in the state for the purpose of making medical and sanitary inspections and in relation to the licensing of spring water vendors.

Mr. Ham reported an inspection in North Canaan regarding the pollution of an auxiliary water supply, copy of which report is on file.

Prof. Conn, Director of the Laboratory, made his report for the quarter, stating that the work was going on smoothly. During November there had been a large increase in the tuberculosis examinations made. There had been no positive examinations for malaria, no rabies, and there had been less glanders in the State. Seventy Wasserman tests had been made for syphilis. Samples of well water had been examined from Bristol on complaint that they were contaminated from the sewage beds nearby. Several were found contaminated within an area of one-fourth of a mile of the sewage beds and there was evidence that these were contaminating a large area.

Prof. Conn reported that Mr. Bengston, one of his assistants in the Chemical Laboratory, had been taken suddenly ill with bovine tuberculosis with little likelihood of recovery, also that Miss Lena Potter had left the first of January to be married, and that Ira D. Joel had been engaged to do the work formerly done by her.

The report of Prof. Conn was accepted.

The Secretary read the report of the committee composed of Mr. Jackson, Dr. Wolff and the Secretary which inspected the sewage disposal plant of the School for Imbeciles at Lakeville. The report was accepted.

On motion it was voted: That the sanitary regulations of the town of Manchester be approved as submitted by its Board of Health.

It was voted: That Prof. Conn be authorized to destroy such of the records relating to water analysis as in his judgment it is unnecessary to preserve.

Prof. Conn having reported that the Health Officer of Wallingford had told a man wishing to have sample of milk examined at the State Laboratory that there would be a

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charge of five dollars, it was voted: That the Secretary take up the matter with the County Health Officer and report to the Board.

Nominations to the State Medical Examining Boards were approved as follows: Connecticut Medical Society, Dr. J. Francis Calef, Middletown; Connecticut Homeopathic Society, Dr. H. A. Roberts, Derby; Connecticut Eclectic Medical Association, Dr. E. H. Marsh, Mansfield Center.

Request from the Health Officer of Greenwich that the State Board of Health take steps to prevent location of a tuberculosis sanatorium on the Greenwich watershed was referred to the Secretary with directions to correspond with the Health Commission of New York state.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., February 3, 1914.

A special meeting of the State Board of Health called for the purpose of nominating a health officer for Litchfield County, vice Frank W. Etheridge, deceased, was held on Friday, February 3, 1914, at the Capitol.

The meeting was called to order at 4:05 p. m. by the President, Dr. E. K. Root.

All members of the Board were present. The Board went into executive session and it was unanimously voted to recommend to his Excellency, Governor Baldwin, the appointment of Mr. William W. Bierce of Torrington to fill the unexpired term of Mr. Etheridge.

The meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., April 8, 1914.

A special meeting of the State Board of Health called for the purpose of nominating health officers for New Haven and Tolland Counties, vice C. E. Hoadley and E. M. Yeomans, resigned, also to act upon set of sanitary regulations submitted

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for its approval by the town of Greenwich, was held at the Capitol, Hartford, on Wednesday, April 8, 1914.

The meeting was called to order at 4 p. m. by the President, Dr. E. K. Root. All members of the Board were present.

The sanitary regulations proposed for the town of Greenwich were first considered. There were present from the town of Greenwich and favoring the regulations, Dr. A. W. Klein, health officer; Mr. H. C. Crawford, first selectman; Mr. W. S. Wright, attorney for the town, and Mr. R. C. Bolling. After an extended discussion it was the opinion of the Board as expressed to the petitioners by Mr. Sperry that the regulations exceeded in their scope anything that the Health Officer had the statutory power to adopt or the State Board of Health to approve, and it was recommended to them that the present regulations be withdrawn and others submitted, after which the State Board of Health would grant another hearing to be held in Greenwich.

The Board then went into executive session for the purpose of nominating county health officers. It was unanimously voted to recommend to his Excellency, Governor Baldwin, the appointment of Mr. Charles W. Evarts of Milford for health officer of New Haven County, and Mr. Michael D. O'Connell of Stafford Springs for health officer of Tolland County.

The meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., April 22, 1914.

The regular quarterly meeting of the State Board of Health was held on Wednesday, April 22nd, 1914, at the Capitol.

The meeting was called to order at 4 p. m. by the President, Dr. E. K. Root.

There were present Drs. Root, Wolff, Pons, Mr. Lewis Sperry, Mr. J. F. Jackson, and the Secretary.

The minutes of the last regular and two special meetings were read and accepted.

The report of the Treasurer was made, accepted and ordered on file.

The Secretary made his report for the quarter, stating that the work of the office had been quite heavy; in addition to the regular routine work the presence of smallpox had demanded

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his attention in various parts of the State, particularly in Meriden and Middletown. He had attended a hearing before the New York State Commissioner of Health at White Plains, N. Y., in opposition to the establishment of a tuberculosis sanatorium on the watershed of the Greenwich Water Co., and with Mr. Jackson had visited the State Insane Asylum at Norwich to advise regarding an additional water supply.

Prof. Conn made his quarterly report for the Laboratory, in which he stated that the Commissioner on Domestic Animals proposed to use the ophthalmic test for the diagnosis of glanders and to apply to the Laboratory to confirm doubtful cases by the complement fixation test. He stated that he had been asked to make the test for contagious abortion in cattle. This was extremely simple and could be done with little additional expense and he recommended that it be done. He had also been requested to test an electrical process for purifying water, and asked the opinion of the Board regarding the advisability of doing this. Mr. Bengston, who left the Laboratory some months ago owing to ill health, had died recently. He expected to keep all the men now employed for another year, although he would probably have to make some increases in salaries.

It was voted that it was not worth while to test the electrical purification of water.

It was voted that Prof. Conn's recommendation regarding test for contagious abortion in cattle be accepted, and that without any advertising of the work, the Laboratory make examinations of such specimens as are sent in.

Mr. Jackson, for the special sewage investigation committee, reported regarding the work it was proposed to carry on the coming summer, and he was authorized to employ such assistance as the committee deemed necessary to carry out the provision of Chapter 220, Public Acts of 1913.

It was voted that the Directory of the Laboratory submit suggestions to the Laborattory Committee previous to the regular meeting of the Board.

It was voted to publish the proceedings of the Seventh Sanitary Conference.

The Secretary reported that the Director of the Census had appointed a man to make transcripts of deaths in the office of the Board for the use of the Census Bureau. This work had been done for the past fourteen years by the clerks in the office as overtime work. The office was already crowded and the presence of a Government employee, over whom the Secretary had no control, and who would be working on the same records as used by the clerks in the office, would inter-

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fere very much with the work. Other states, where the same thing had been attempted, were unanimous in opposing it.

It was voted that Mr. Sperry and the Secretary be appointed a committee with power regarding the furnishing of transcripts of deaths to the Census Bureau.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., May 22, 1914.

A special meeting of the State Board of Health was held at the Capitol on Friday, May 22, 1914.

This meeting was called for the purpose of taking action on the request from the Connecticut Medical Examining Board to revoke the license to practice medicine of Dr. George W. Belden and Dr. Bennett S. Lewis, and to transact any other business proper to come before the meeting.

The meeting was called to order at 3:30 p. m. by the President, Dr. E. K. Root.

There were present Drs. Root, Phillips and Pons, Mr. J. Frederick Jackson, and the Secretary.

The Secretary read the request for the revocation of these licenses, together with the evidence submitted in each case, after which it was voted: To revoke and cancel the certificates of registration granted Dr. George W. Belden and Dr. Bennett S. Lewis.

A set of rules and regulations concerning the sanitation and inspection of barber shops throughout the state was submitted by the State Board of Examiners of Barbers for the approval of this Board, as provided in Chapter 130 of the Public Acts of 1903, and on motion it was voted to approve these rules and regulations as submitted.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., July 9, 1914.

The regular quarterly meeting of the State Board of Health was held at the Capitol on Thursday, July 9, 1914.

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The meeting was called to order at 4 p. m. by the President, Dr. E. K. Root.

All the members of the Board were present.

The minutes of the last quarterly and the special meeting were read and approved.

The report of the Treasurer was made, accepted and ordered on file.

It being the annual meeting, the election of officers was next in order. The election resulted as follows:

For President—Dr. E. K. Root.

For Treasurer—Dr. J. H. Townsend.

Auditors—Mr. Lewis Sperry and Mr. J. F. Jackson.

Committee on Water Supplies and Sewage—Mr. J. F. Jackson, Dr. E. K. Root and the Secretary.

Laboratory Committee—Drs. Root, Phillips, Wolff, Pons and Townsend.

Member of the Board of Examiners of Embalmers—Dr. J. H. Townsend.

Director of the Laboratory and Bacteriologist—Prof. H. W. Conn.

Sanitary Inspector—Mr. George C. Ham.

Managers of County Homes—Dr. E. K. Root, Hartford County; Dr. A. W. Phillips, New Haven County; Dr. J. H. Townsend, New London County; Mr. J. F. Jackson, Fairfield County; Dr. A. J. Wolff, Windham and Middlesex Counties; Dr. L. J. Pons, Litchfield County; Mr. Lewis Sperry, Tolland County.

The Secretary reported visits of inspection and consultation with health officers in Norwich, Middletown, Terryville, Winsted, Cheshire, Naugatuck, Newtown, Greenwich, and Torrington. In Torrington, where he spent two days in the latter part of June, there had been an epidemic of scarlet fever which had caused considerable alarm among the people of the town. In Winsted he had been summoned to testify in a suit against the Torrington Water Co., growing out of the typhoid fever epidemic at Torrington in 1911. He asked the opinion of the Board whether he was entitled to charge for his services as a witness when called to testify in civil cases. It was the opinion of the legal member of the Board, Mr. Sperry, that he was not, and should not testify except when subpoenaed. The report of the Secretary was accepted.

Prof. Conn, Director of the Laboratory, made his quarterly report. In addition to the regular diagnostic work, four examinations had been made for contagious abortion in cattle. The milk examinations had shown forty-two that were below the legal standard for fats, and seventeen samples that were watered. The Wasserman test for syphilis had been popular

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with hospitals, about fifty being made each month. He recommended that the salary of his assistant, Mr. Story, be increased to $1,200.00 per annum and that of Mr. Bransfield to $1,000.00 per annum. He stated that there would be about $1,800.00 available in the Laboratory account for the special investigation of the pollution of streams now being made by the Board. The report of Prof. Conn was accepted, and it was voted to increase the salaries recommended.

The Secretary read a letter from the Greenwich Sewer Committee, asking the Board to approve plans for a sewage system, which it was proposed to install in Greenwich, also his reply in which he defined the position of the Board in refusing to approve any sewage disposal plans.

A letter was read from the State Fish and Game Commission, placing at the disposal of the State Board of Health all their facilities, and offering their heartiest co-operation in the investigation of the contamination of the waters of the State.

Dr. Wolff stated that the Committee in charge of the report to be made to the Legislature on the pollution of streams should be given every assistance in making a creditable report, even to the employment of additional help.

It was voted that the Director of the Laboratory be empowered to employ whatever laboratory assistance be necessary to fulfill the provisions of the Act authorizing this investigation and to enable the Committee to carry on its work.

The Secretary was instructed to communicate with the Municipal laboratories of the State asking their co-operation in our investigation of the pollution of streams.

Mr. Jackson, chairman of the Committee on Water Supplies and Sewage read a report on an inspection by his Committee of the Thompsonville Water Supply. The report was accepted and a copy ordered sent to the Board of Selectmen of Enfield.

R. N. Johnquest of Stamford and W. S. Todd of Hartford were appointed members for three years of the Connecticut State Board of Examiners in Optometry on nomination of the State Optical Society.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

HARTFORD, CONN., October 9, 1914.

The regular quarterly meeting of the State Board of Health was held at the Capitol on Friday, October 9, 1914.

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The meeting was called to order at 4 p. m. by the President, Dr. E. K. Root.

There were present Dr. E. K. Root, Dr. A. W. Phillips, Dr. A. J. Wolff, Mr. Lewis Sperry, Mr. J. F. Jackson and the Secretary.

The minutes of the last quarterly meeting were read and approved.

The report of the Treasurer was made, accepted and ordered on file.

The Secretary made his quarterly report telling of visits in consultation with health officers in various parts of the State. He had attended and read a paper at the annual meeting of the State Funeral Directors' Association, and also at the semi-annual meeting of the Litchfield County Health Officers. Reported that eighty spring water dealers had been licensed during the year ending August 1st, 1914, and that eight hundred dollars had been collected in license fees and turned into the State Treasury; that the appropriation for the free distribution of antitoxins was exhausted and an appeal to the State Board of Control for additional funds with which to carry on the distribution had met with a refusal, so that when the small stock now on hand was gone the distribution must cease until the Legislature made a further appropriation.

A complaint concerning the advertising methods of a certain irregular practitioner in New Haven, it was voted to refer to the U. S. District Attorney.

Resolutions received from Dr. F. G. Atwood of New Haven concerning the sale of diseased cattle for food, it was voted to approve and refer to the Dairy and Food Commissioner.

The Secretary presented the report of Sanitary Inspector Ham on an inspection of Cedar Swamp located in the towns of Bristol and Wolcott. The report was accepted and ordered transmitted to the Common Council of Bristol which had requested the inspection and report.

Prof. Conn, Director of the Laboratory, in his report stated that besides the regular routine examinations 512 samples of river water with 256 colon tests had been made. This work had been done in connection with the investigations of the pollution of streams during the past summer. The milk examinations were not so many as formerly since he had not been pushing this work. More syphilis specimens had been received from Hartford than all the rest of the state combined. A change had been made in the cities for which regular monthly examinations of water were being made. He recommended that in order to make the Laboratory of greater benefit to the State, analyses of well water requested

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by the health officers be made with greater freedom; also that positive reports on diphtheria examinations be telephoned to the physicians sending the cultures, at the expense of the State.

The report of Prof. Conn was accepted and it was voted: That the Director of the Laboratory be authorized to use his discretion in making examinations of water for health officers. It was also voted: That the Director of the Laboratory be empowered to telephone positive diphtheria reports to physicians at the expense of the Laboratory.

Mr. Jackson, Chairman of the Special Committee investigating the pollution of streams, reported that the collection of samples of river water was now completed and they were getting into shape the report on analyses; were also tabulating towns having sewage systems. He had corresponded with the U. S. Public Health Service and they had promised to cooperate in the investigation in every way. At the suggestion of Prof. Conn he had requested the Public Health Service to send their water expert, Prof. Earle B. Phelps, to look over our work. Had been able to do very little on harbors except at the mouth of rivers.

The report of Mr. Jackson was accepted.

On motion of Dr. Phillips it was voted: That Dr. Wolff, Prof. Conn and the Secretary be appointed delegates to represent the Board at the meeting of the American Public Health Association to be held in Jacksonville, Florida, in December.

There being no further business, the meeting then adjourned.

Attest:

JOSEPH H. TOWNSEND, M. D., *Secretary.*

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GENERAL HEALTH OF THE STATE

The biennial period ending September 30, 1914, has not been marked by the unusual prevalence of any infectious diseases, excepting mild smallpox. In the towns where this occurred, it caused considerable expense, but only one death resulted.

The vital statistics report for 1913 has been compiled, printed and was presented to the Governor October 1, 1914. The statistics for 1914 can only be furnished approximately as the statistical year does not end until December 31st, and of necessity, time must be given for the classification and tabulation of the vast amount of figures which the vital statistics represent. The total number of deaths reported by the registrars in 1913 was 17,722, equivalent to a crude death rate of 15. per thousand of population. In 1914 there were 18,208 deaths, which equals a death rate of 15.1 per thousand. The report of the U. S. Census Bureau for 1913, for the purpose of comparison, corrects the state death rates according to age and sex distribution of the population. These rates for Connecticut and adjoining states are given below and show how we stand as compared with our neighbors:

New York .....15.2 per thousand.
Rhode Island .....15. per thousand.
Massachusetts .....14.7 per thousand.
Connecticut .....14.4 per thousand.

SANITARY ADMINISTRATION.

The experience of several years in administering the health laws of the State leads to the conclusion that while the advisory relation of the State Board of Health to local health boards and health officers has been of great service in the control of communicable diseases and the abatement of unsanitary conditions, there is an inherent weakness in our laws, in that no power is vested in the State Board of Health to enforce sanitary regulations in the various towns of the State.

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Sanitary administration is approximately near its full development under the restrictive legislation which now directs and controls it. By the existing system the measure of success depends largely upon the personality of the 168 town Health Officers and the Health Officers of the cities and boroughs. On each is imposed the sole authority over the territory of his own jurisdiction. All sanitary authority is local—limited to the municipality which each Health Officer controls. Hence in each, the character of the work done depends upon the capacity, intelligence, prompt action and judgment of each Health Officer in his own town or city.

While in most of the cities and many of the towns the health administration is efficient and the health of the public is carefully guarded, in others, and especially in the smaller towns, no adaquate protection of health is secured. The extension of trolley lines during the past few years has resulted in easy communication between towns and has greatly increased the population in the towns adjacent to cities, so that each town is deeply interested in its neighbors. It is at once apparent that cities or towns in which adequate service is rendered by the health officials are often surrounded by towns of considerable size, where opposite conditions prevail. Therefore cases of infectious diseases which are not properly isolated or quarantined may carry the infection to other cities and towns and virtually render useless the protective measures adopted there. The suggestion is therefore repeated that some change be made in the present law which will allow the State Board of Health to take charge in localities where the control of contagious diseases is unsatisfactory. Such a change would lead to lasting improvement and tend to lessen contagious diseases and death rates.

The conditions under which people live and work are also subject for inquiry and action by health boards, and the powers of the Board could be profitably enlarged along these lines. In 1913 the deaths from suicides numbered 183, far exceeding the deaths from typhoid fever, while the accidental deaths were 1,014, which with the exception of tuberculosis, is in excess of the deaths from all the common infectious diseases.

MORTALITY FROM PROMINENT DISEASES.

We refer on the following pages to some of the more prominent causes of death and the charts given show the variations in death rates from year to year. It will be noticed that while during the past thirty years there has been a uniform decline in the death rates from most of the infectious

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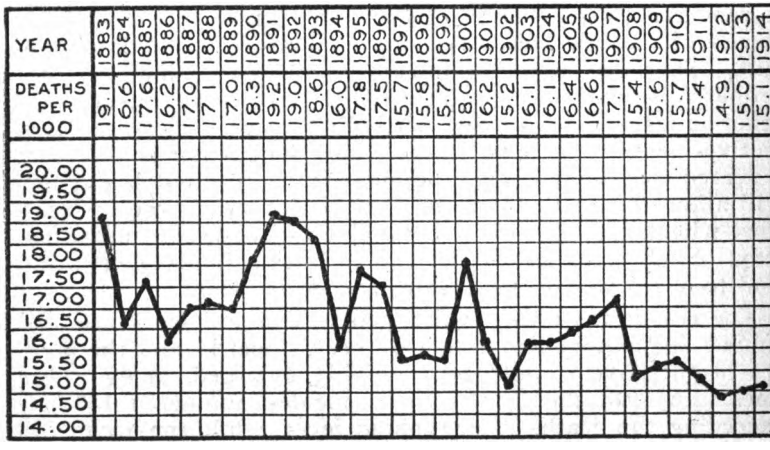
diseases, there has been a constant increase in certain other diseases, such as Bright's disease, apoplexy and cancer. This is partly explained by the fact that owing to the declining death rates from most of the preventable diseases of early life, more people reach the age when they are liable to the latter class of diseases.

The sanitary condition of a community or a country, cannot be ascertained except by studying the causes of death and the death-rates for a considerable period of years. This explains why tables of thirty years and of longer terms are published in this report. The following chart gives the annual death-rate per 1,000 population for thirty-four years. The early death-rates are no doubt lower than they would have been if the deaths had been recorded with the completeness now attained.

CHART I.—SHOWING DEATHS IN CONNECTICUT FROM ALL CAUSES PER 1,000 POPULATION FOR THIRTY-FOUR YEARS, 1880-1913 INCLUSIVE.



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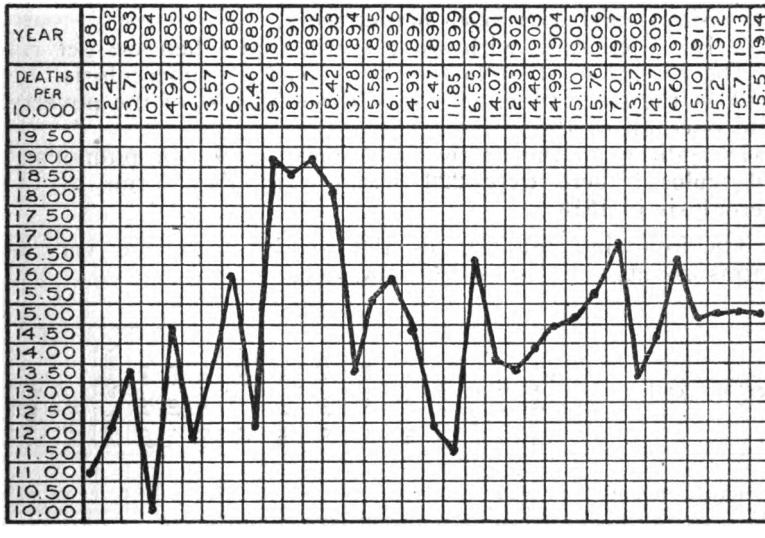
PNEUMONIA.

Pneumonia now causes more deaths in Connecticut than any other single disease. During the year 1913 there were 1,855 deaths, including those from broncho-pneumonia, and 1,877 deaths in 1914. Of the 1,855 deaths from pneumonia in 1913, 576 cases, or thirty per cent., occurred in children under two years of age and 400 cases, or twenty per cent., were of persons over seventy years of age; that is, a little more than one-half the deaths occurred in the very young or very old. It will also be seen from a study of the mortality tables that the death rate is higher in the larger cities than in the towns or rural districts, which would indicate that overcrowding favors the disease. Chart II. shows the death rates in the State from pneumonia during the last thirty-four years.

CHART II.—SHOWING DEATH RATES IN CONNECTICUT FROM PNEUMONIA PER 10,000 POPULATION FOR THITRY-FOUR YEARS, 1881-1914, INCLUSIVE.



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CONSUMPTION.

During the year 1913 there were reported by the local Health Officers 1,907 cases of pulmonary tuberculosis and 1,896 cases in 1914. The deaths in 1913 numbered 1,436, which is equivalent to a death rate of 12.2 per ten thousand population, while in 1914 there were 1,483 deaths, equal to a death rate of 12.3 per ten thousand. Chart III., shows the death rates from pulmonary tuberculosis for the last thirty two years. It will be seen that while during that period there has been a fall in the death rate of about forty-five per cent., there has been little change in the last three years. Following Koch's discovery of the tubercle bacillus in 1881, and the application of the knowledge gained thereby, there was in the next few years a considerable reduction in the death rate, which has been lowered still more by the very active anti-tuberculosis campaign of the last twelve or fifteen years and it might seem that we had only to continue this campaign and tuberculosis would soon be eliminated, but it is probable that further reduction will be accomplished more slowly and with much harder work.

It has been said, with some truth, that when we get rid of the conditions that favor the spread of tuberculosis, we will, at the same time, get rid of three-fourths of the poverty and one-half of the crime.

In addition to the deaths from consumption or pulmonary tuberculosis, there were 223 deaths from other forms of tuberculosis in 1913.

The following table gives the deaths from the various forms of tuberculosis by ages and sex:

Causes of Death.	Under 1	1 to 2	2 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 to 90	Not stated	Male	Female	Total.
Tuberculosis (total) ..	..	..	..	..	...	...	...	...	...	..	..	..	..	...	...	1659
Tuberculosis of lungs..	24	12	8	11	103	282	354	251	121	67	35	4	2	833	541	1374
Acute miliary tuberc'sis	..	2	1	2	13	20	8	10	2	3	1	..	..	37	25	62
Tubercular meningitis .	28	25	23	20	10	9	4	2	2	..	..	1	..	63	61	124
Abdominal tuberculosis .	4	2	7	4	5	6	5	3	4	3	1	..	..	22	22	44
Potts' disease	..	..	1	3	...	3	4	...	...	..	1	..	..	6	6	12
White swellings	..	1	1	3	...	...	...	1	2	..	..	..	..	6	2	8
Tuberc'sis, other organs	2	..	2	2	1	3	4	3	3	1	2	..	..	10	13	23
Disseminated tuberc'sis..	1	2	1	..	...	1	3	2	...	1	1	..	..	6	6	12

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CHART III.—SHOWING DEATH RATES IN CONNECTICUT FROM PULMONARY TUBERCULOSIS PER 10,000 POPULATION FOR 32 YEARS, 1883-1914, INCLUSIVE.

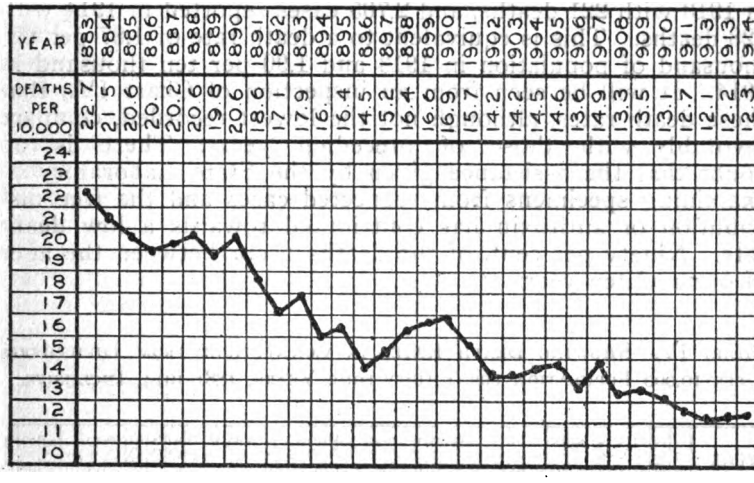

TABLE SHOWING DEATHS FROM CONSUMPTION IN CONNECTICUT PER 10,000 POPULATION, FOR 32 YEARS, 1883-1914.

Years.	Population.	Deaths.	Death-rate per year.	Years.	Population.	Deaths.	Death-rate per year.
1883	659,765	1,505	22.7	1899	892,196	1,451	16.6
1884	672,120	1,446	21.5	1900	908,420	1,539	16.9
1885	684,475	1,409	20.6	1901	928,000	1,467	15.7
1886	696,830	1,395	20.0	1902	948,000	1,356	14.2
1887	709,185	1,435	20.2	1903	956,748	1,364	14.2
1888	721,540	1,498	20.6	1904	973,177	1,412	14.5
1889	733,895	1,465	19.8	1905	989,570	1,453	14.6
1890	746,258	1,541	20.6	1906	1,005,894	1,369	13.6
1891	762,474	1,424	18.6	1907	1,021,930	1,527	14.9
1892	778,690	1,386	17.1	1908	1,038,240	1,391	13.3
1893	794,906	1,426	17.9	1909	1,054,347	1,431	13.5
1894	811,116	1,314	16.0	1910	1,114,756	1,462	13.1
1895	827,326	1,358	16.4	1911	1,135,410	1,453	12.7
1896	843,536	1,227	14.5	1912	1,156,045	1,409	12.1
1897	859,746	1,306	15.2	1913	1,176,621	1,436	12.2
1898	875,960	1,438	16.4	1914	1,197,266	1,483	12.3

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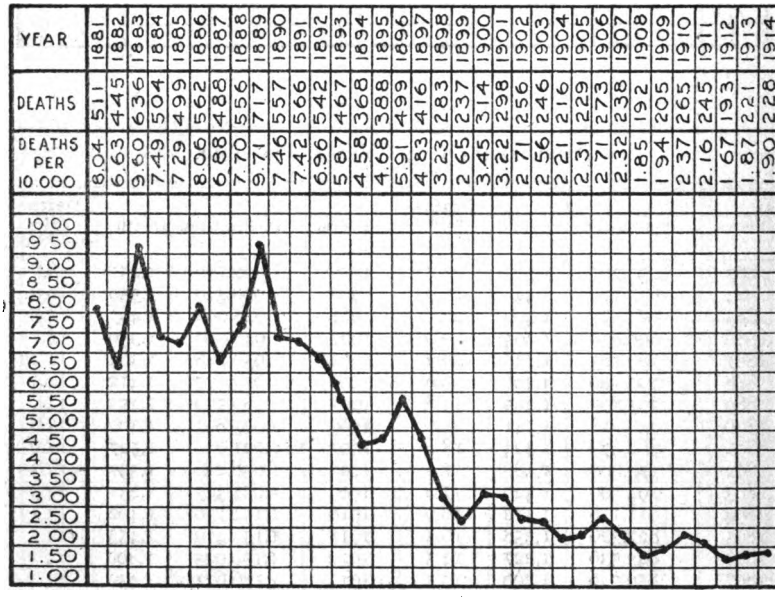
DIPHTHERIA.

There were 2,430 cases of diphtheria reported in the state in 1913 with 221 deaths, and 2,705 cases reported in 1914 with 228 deaths. This is equivalent to a death rate of 1.87 per ten thousand of population in 1913 and 1.90 per ten thousand in 1914. It will be seen from an inspection of Chart IV., that these death rates, although not the lowest recorded, compare favorably with those of preceding years. There is no doubt that the assistance given by the State Laboratory in examining specimens from suspected cases and the free distribution of antitoxin has contributed towards a low death rate. Ninety per cent. of the deaths occur between the ages of one and ten years.

CHART IV.—SHOWING DEATH RATES IN CONNECTICUT FROM DIPHTHERIA PER 10,000 POPULATION FOR THIRTY-FOUR YEARS, 1881-1914, INCLUSIVE.



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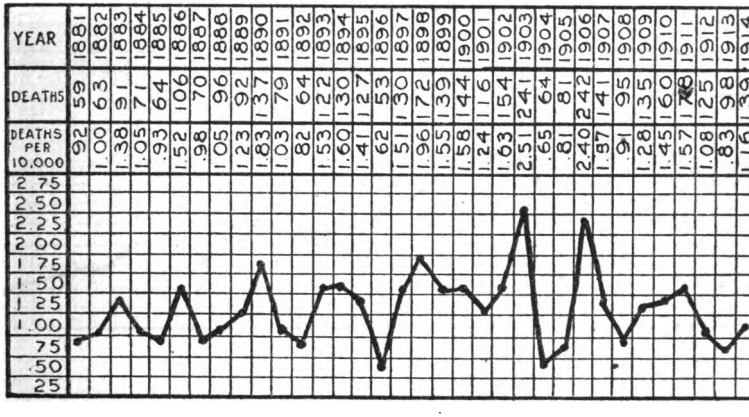
WHOOPING COUGH.

There were 1,201 cases of whooping cough reported in 1913 with 98 deaths, and 1,094 cases reported in 1914 with 139 deaths. The number of cases reported gives no accurate idea of the prevalence of this disease, as in many cases no physician is called and when the disease becomes epidemic in a community, little attention is paid to reporting it. The control of whooping cough by local Boards of Health is a difficult problem and until some method is devised for the early discovery of this disease, with a reasonable quarantine of affected persons, there is little hope of any material decrease, either in the disease or the death rates. Chart V., shows the death rate each year for the past thirty-four years and it will be noticed that, while the curve is very irregular from year to year, a high death rate being following by a low rate for two or three years, there has, in fact, been very little change during the period.

CHART V.—SHOWING DEATH RATES IN CONNECTICUT FROM WHOOPING COUGH PER 10,000 POPULATION FOR THIRTY-FOUR YEARS, 1881-1914 INCLUSIVE.



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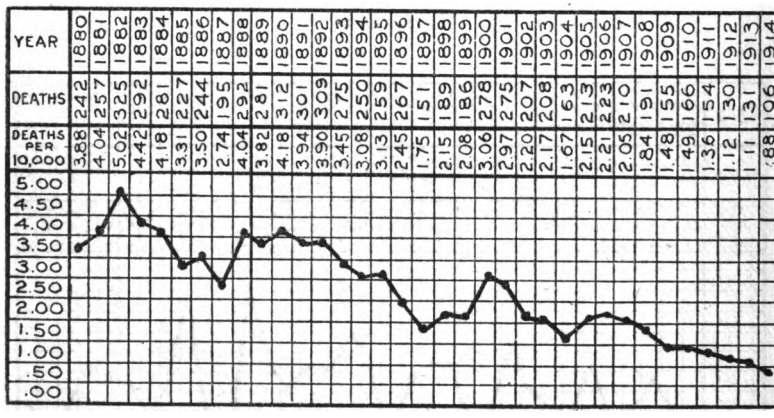
TYPHOID FEVER.

Typhoid fever was reported from 83 towns in 1913, there being 1,009 cases with 131 deaths. In 1914 there were 723 cases reported from 82 towns with 106 deaths. As the death rate is considered to be about one death in every ten cases of fever, it would appear that about one-fourth of our typhoid fever cases are not reported by the attending physicians. This is not very creditable when we consider to what an extent the control of the disease depends on a prompt report to the health officials. The death rate of 1913 is the lowest recorded up to that time, but the rate of 1914 is about twenty per cent. lower and represents a death rate of 8.8 per one hundred thousand population. With a continuance of present conditions the automobile will soon be a more important factor in our death rates than typhoid fever. The decrease for the past thirty-five years is shown in Chart VI.

CHART VI.—SHOWING DEATH RATES IN CONNECTICUT FROM TYPHOID FEVER PER 10,000 POPULATION FOR 35 YEARS, 1880-1914 INCLUSIVE.



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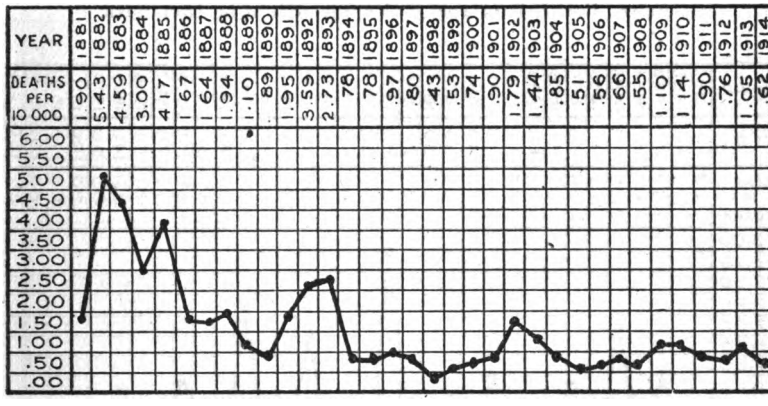
SCARLET FEVER.

There were 2,602 cases of scarlet fever reported by the local Health Officers in 1913, with 114 deaths, and 1,968 cases reported in 1914 with 75 deaths. The disease has appeared generally in mild form. No epidemics are so hard to control as those in which the illness is not severe enough to confine the patients to bed. The mild cases distribute the infection without restriction.

Chart VII., shows the decline in the death rate during the past thirty years, the disease being less fatal than formerly.

CHART VII.—SHOWING DEATH RATES IN CONNECTICUT FROM SCARLET FEVER PER 10,000 POPULATION FOR 34 YEARS, 1881-1914 INCLUSIVE.



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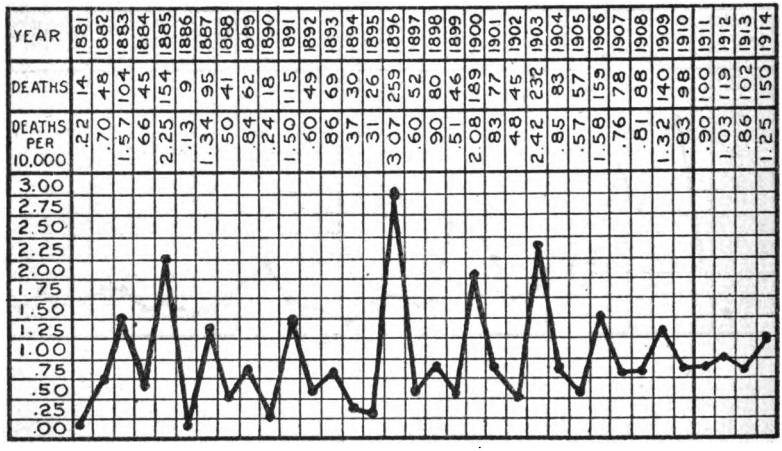
MEASLES.

There were 5,857 cases of measles reported during the year 1913, with 102 deaths, and 5,363 cases reported during the year 1914, with 150 deaths. It is probable that there were many more cases which were not reported. There is no disease more contagious than measles and is so even before the characteristic symptoms appear. It is a serious disease in young children, nine-tenths of the deaths reported occurring under the age of five years, so that it is very important to protect young children from exposure to the disease.

Chart VIII. shows the death rate each year for the past thirty-four years.

CHART VIII.—SHOWING DEATH RATES IN CONNECTICUT FROM MEASLES PER 10,000 POPULATION FOR 34 YEARS, 1881-1914 INCLUSIVE.



SMALLPOX.

There were 193 cases of smallpox reported from twenty-four towns in 1913, with one death. Brooklyn, Danielson, Montville, Norwich and Plainfield were the towns principally affected. During 1914 there were 93 cases reported from sixteen towns. Meriden, Middletown, Portland and Sprague contributed the majority of the cases. The disease was generally of the mild type that has prevailed in the United States during the past few years.

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MALARIA.

There were thirteen deaths reported from malarial diseases in 1913 and seven deaths in 1914. As these disorders are seldom fatal in proportion to the whole number, the deaths attributed to them do not afford much information regarding their prevalence.

An interesting fact is, that previous to the Civil War, malaria had been for a long period almost unknown within the borders of the state. It appears to have been brought north by the soldiers returning from the war and was then carried by the Anopheles mosquitoes here present to almost every inhabited part of the state. It was very prevalent in the seventies and then gradually subsided. The reports of the Town Health Officers indicate that it has been more common again during the past two or three years, particularly in the southern and southwestern parts of the state, and possibly the Italian immigrant has had something to do with its reappearance. Greenwich has been one of the principal sufferers and in 1912 the number of cases was estimated at about nine hundred. A house to house canvass for cases and a vigorous anti-mosquito campaign has caused it to almost entirely disappear, so that few cases have been reported there during the past two summers.

CEREBRO-SPINAL FEVER.

There have been no epidemics of this disease during the past two years, although sporadic cases have been reported. In 1913, 34 cases were reported from eighteen towns with sixteen deaths. In 1914 there were 33 cases reported from sixteen towns with twenty-one deaths.

INFANTILE PARALYSIS.

Acute anterior poliomyelitis, commonly known as infantile paralysis, prevailed only to a slight extent. Eighteen cases were reported in 1913, while in 1914 there were 25 cases reported with three deaths in each year.

LEPROSY.

There are at the present time no known cases of leprosy in the State. The Hartford case reported in 1911 died in October, 1913.

RABIES.

There has been but little rabies among animals during the past two years. Two positive specimens were examined at the Laboratory in 1913, and fourteen positive specimens in 1914. There was one death from human rabies in 1913.

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PELLAGRA.

It is only recently that pellagra has been recognized in Connecticut and the first case coming to the attention of this Board was a death reported from New Canaan in 1911. In 1913 there were four deaths reported in the State and in 1914 three deaths. As the disease very frequently leads to insanity, it would be expected, that, if there were any number of cases in Connecticut, there would be some in our insane asylums. The Superintendent of the Hospital for the Insane, at Middletown, tells me, however, that during an experience of thirty years at that institution, he has met with only one case, while at the Norwich Asylum two cases have been recognized.

While the disease has for a long time caused extensive ravages in Central and Southern Europe, it was overlooked in this country until 1906-1907, when an outbreak was reported in the Alabama Insane Asylum. Since then a flood of cases have come to light all over the country, especially in the South. The disease has occurred generally in the poor and badly nourished, and, as it was found mostly in the corn producing belt, where corn is used largely as an article of diet by the poorer classes, it was thought to be due to eating spoiled corn. The best observers still believe that it is of dietary origin and is not an infectious or contagious disease; that it is dependent upon some yet undetermined fault in diet, where the animal or leguminous component is disproportionally small and that it does not develop in those who consume a mixed, well balanced and varied diet.

DEATHS AMONG CHILDREN.

The deaths among children under five years of age in 1913 numbered 4,514, which is a death rate of 38.3 per 10,000 population or 25.4 per cent. of the total mortality. In 1914 there were 4,369 deaths or 36.4 per ten thousand population.

The following table and charts cover a period of twenty-six years (1889-1914) and show the mortality in children under one year of age and from one to five years. Our vital statistic report for 1913 contains a table showing the deaths of infants by days, weeks and months with the more prominent causes of mortality. From this we learn that of 3,347 infants dying under one year, 979 were under one week old and 1,480 under one month, the principal causes of death being prematurity and congenital debility. Between the ages of one and twelve months, diarrhoea and enteritis lead as causes of death with pneumonia second.

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TABLE SHOWING MORTALITY AMONG CHILDREN UNDER ONE YEAR AND FROM ONE TO FIVE YEARS; ALSO THE RELATION TO TOTAL BIRTHS AND DEATHS.

Year.	Total Mortality	Mortality under 1 yr.	Mortality 1 to 5 yrs.	Total births.	Annual No. of deaths under 1 yr. to 1,000 living births.	Percentage under 1 yr. to total deaths.	Percentage of deaths 1 to 5 yrs. to total deaths
1889	12,529	2,440	1,135	17,176	142	19.4	9.0
1890	13,665	2,540	1,162	17,394	145	18.5	8.5
1891	14,385	2,759	1,242	18,557	148	19.1	8.6
1892	15,170	2,901	1,287	19,750	147	19.0	8.4
1893	14,901	2,921	1,332	20,296	144	19.6	8.9
1894	13,699	2,812	1,099	20,345	138	20.5	8.0
1895	14,546	3,014	1,151	19,931	151	20.7	7.8
1896	15,025	3,219	1,506	21,324	151	21.4	10.0
1897	13,915	2,734	1.196	20,580	135	19.6	8.5
1898	14,170	2,935	1,159	21,023	140	20.7	8.1
1899	14,381	2,823	970	20,855	135	19.6	6.7
1900	16,368	3,521	1,294	20,560	170	21.5	7.8
1901	14,856	2,805	1,063	20,294	138	18.8	7.1
1902	14,386	2,864	1,139	21,216	135	19.9	7.9
1903	15,490	2,972	1,275	21,751	137	19.1	8.2
1904	15,711	3,033	1,000	22,864	134	19.3	6.3
1905	16,298	3,159	1,076	23,271	136	18.7	6.6
1906	16,766	3,455	1,243	24,641	140	20.6	7.4
1907	17,490	3,433	1,192	25,945	132	19.6	6.8
1908	16,000	3,251	1,038	26,694	122	20.3	6.5
1909	16,484	3,365	1,128	26,431	127	20.4	6.8
1910	17,500	3,472	1,234	27,314	127	19.8	7.0
1911	17,554	3,247	1,204	28,176	115	18.4	6.8
1912	17,315	3,430	1,135	29,039	118	19.8	6.4
1913	17,722	3,347	1,167	30,122	111	18.8	6.5
1914	18,208	3,268	1,101	31,300	104	18.0	6.0

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CHART IX.—SHOWING DEATH RATES AMONG CHILDREN UNDER ONE YEAR OF AGE PER 10,000 POPULATION FOR 26 YEARS, 1889-1914 INCLUSIVE

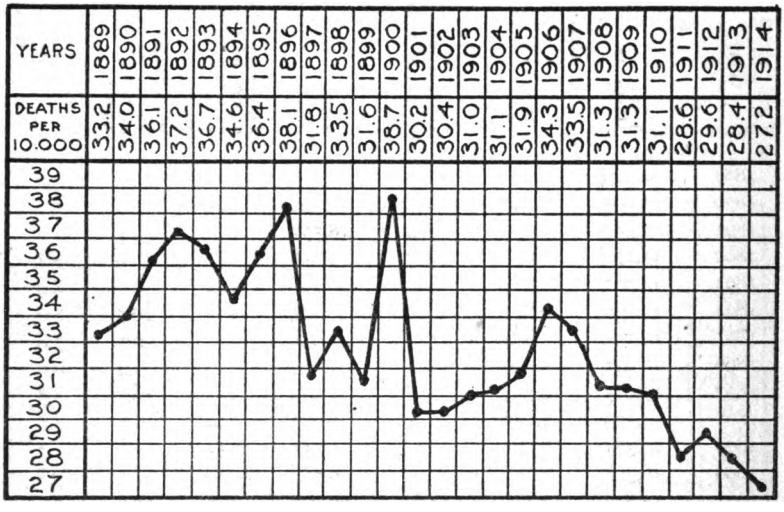
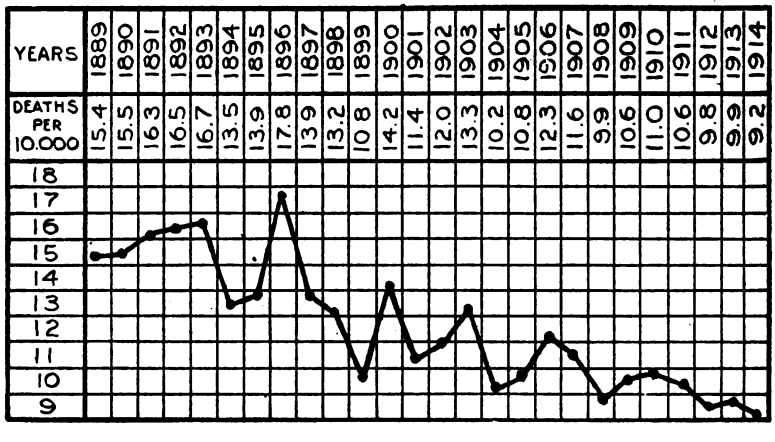


CHART X.—SHOWING DEATH RATES AMONG CHILDREN FROM ONE TO FIVE YEARS OF AGE FOR 26 YEARS, 1887-1914 INCLUSIVE.



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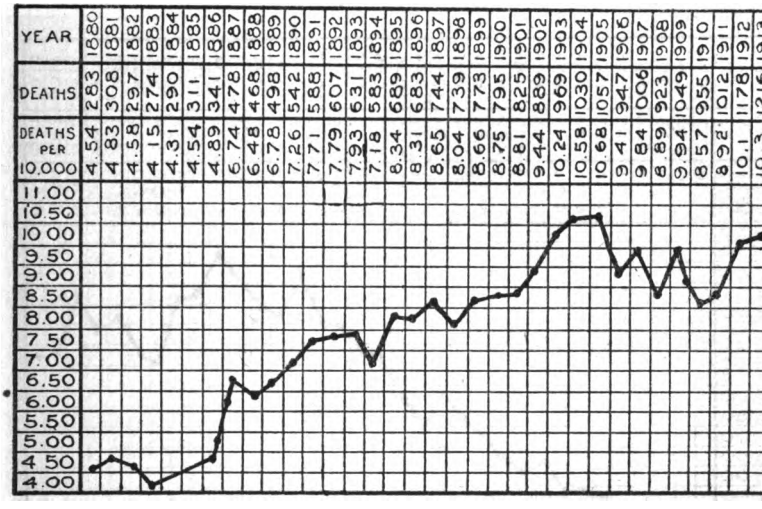
CEREBRAL HEMORRHAGE.

Cerebral hemorrhage or apoplexy was the cause of 1,216 deaths in 1913. More than ninety per cent. of these occurred after the age of fifty, the maximum period being from seventy to eighty. Chart XI. shows the death rates for the past thirty-four years.

CHART XI.—SHOWING DEATH RATES FROM CEREBRAL HEMORRHAGE PER 10,000 POPULATION FOR 34 YEARS, 1880-1913 INCLUSIVE.



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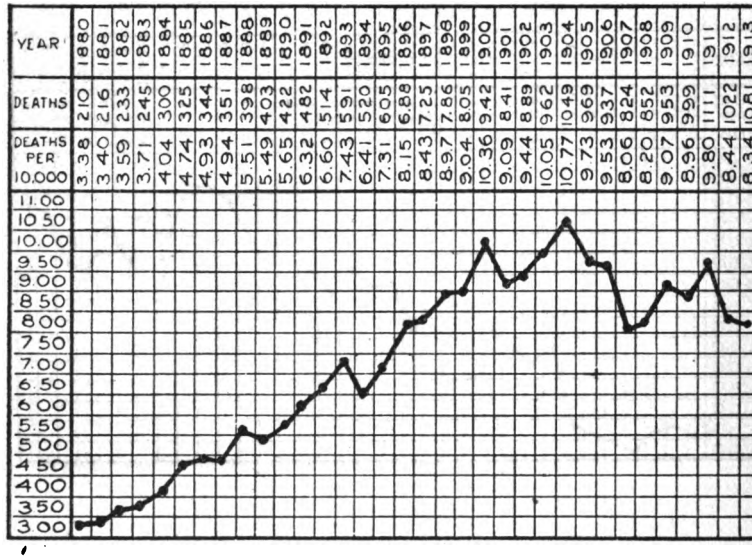
BRIGHT'S DISEASE.

Bright's disease, like cerebral hemorrhage, organic diseases of heart and cancer, occurs almost entirely in the later periods of life. Chart XII. shows the number of deaths and the death rates for thirty-four years (1880-1913). It will be noticed that the death rate from this disease has more than doubled during this period.

CHART XII.—SHOWING DEATH RATES FROM BRIGHT'S DISEASE PER 10,000 POPULATION FOR 34 YEARS, 1880-1913 INCLUSIVE.

YEAR	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
DEATHS	210	216	233	245	300	325	344	351	398	403	422	482	514	591	520	605	688	725	786	805	942	841	889	962	1049	969	937	824	852	953	999	1111	1022	1081
DEATHS PER 10,000	3.38	3.40	3.59	3.71	4.04	4.74	4.93	4.94	5.51	5.49	5.65	6.32	6.60	7.43	6.41	7.31	8.15	8.43	8.97	9.04	10.36	9.09	9.44	10.05	10.77	9.73	9.53	8.06	8.20	9.07	8.96	9.80	8.44	8.34



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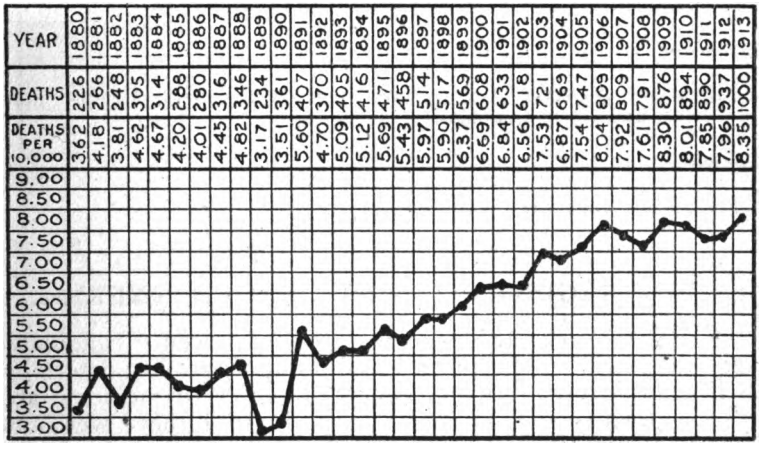
CANCER.

The word cancer is used in its popular sense, covering all forms of malignant growths. Such tumors were the cause of 1,000 deaths in 1913, equivalent to a death rate of 8.35 per 10,000 population. The largest number of deaths due to any one form of malignant growths was cancer of the stomach and liver, 360. Chart XIII. shows the increase in the death rate from this disease for the past thirty-four years.

CHARTS XIII.—SHOWING DEATH RATES FROM CANCER PER 10,000 POPULATION FOR 34 YEARS, 1880-1913 INCLUSIVE.



THE SEVENTH SANITARY CONFERENCE.

The Seventh Sanitary Conference of the Health Officials of Connecticut was held under the auspices of the State Board of Health, in the Chamber of Commerce Hall, New Haven, on March 5, 1914. Following the plan of the two previous conferences, it was decided to concentrate the work of the day on one subject and the various aspects of stream pollution were discussed. The proceedings of this conference have been published and distributed, so that it is unnecessary to state further what was done at this meeting. The program presented was as follows:

PROGRAM.

Call to Order, 10 a. m.

Introductory Remarks, by the Chairman, Dr. Edward K. Root, President the State Board of Health.

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Address by His Excellency. Governor Simeon E. Baldwin.

Subject for Discussion—The Pollution of Our Inland and Tidal Waters—Its Legal Aspects: Hon. Lewis Sperry, Hartford, Member of the State Board of Health.

Discussion.

Its Engineering Aspects: Mr. J. Frederick Jackson, New Haven, Member of the State Board of Health.

Discussion.

Intermission.

Pollution by Factory Wastes: Mr. James A. Newlands, Hartford, State Chemist.

Discussion.

Its Economic Aspects: Mr. E. Hart Fenn, Wethersfield, Member State Fish and Game Commission.

Discussion.

Miscellaneous Business. Adjournment.

THE REGISTRATION OF PRACTITIONERS.

During the year 1913 one hundred and twenty candidates were examined by the several examining Boards to determine their qualifications for the general practice of medicine and for the practice of midwifery, while in 1914 there were one hundred and twenty-five examined, making a total of two hundred and forty-five examined during the two years. In addition, the Eclectic Board has in three instances, and the Homeopathic Board in seven instances, accepted the licenses to practice granted by other states, in lieu of examination. Of the candidates examined, two hundred and four were examined by the Board representing the Connecticut Medical Society, sixteen by the Homeopathic Board and five by the Eclectic Examining Board, while the Midwifery Board appointed under Chapter 189, Public Acts of 1913, has examined twenty applicants during the past year.

Seven of the physicians examined and found qualified, and one midwife have neglected to register with the State Board of Health and receive their licenses. They are, therefore, not legally entitled to practice in this State.

The following is a tabulated statement of the work of each Examining Board:

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EXAMINATIONS BY BOARDS REPRESENTING THE THREE STATE MEDICAL SOCIETIES

Medical Examining Boards	Passed		Failed		Accepted Examinations of other states	Total
	General Practice	Midwifery	General Practice	Midwife		
Connecticut.						
1913	58	10	32	10	0	110
1914	60	0	34	0	0	94
Homeopathic,						
1913	7	0	0	0	2	9
1914	8	0	1	0	5	14
Eclectic,						
1913	0	2	1	0	2	5
1914	2	0	0	0	1	3
Midwifery,						
1914	..	12	..	8	..	20
Total,	135	24	68	18	10	255

THE LICENSING OF EMBALMERS.

Under the provisions of the law of 1903, providing for the licensing of embalmers, The State Board of Examiners of Embalmers have held four regular examinations each year. These examinations were held at the Yale Medical School in New Haven and the Secretary of the State Board of Health has usually been present, taking part in the examinations as the law provides. The examinations are written with oral demonstrations on the cadaver and serve well to test the ability of the applicant to perform the duties of an embalmer.

During the year 1913 twenty-eight candidates were examined: sixteen passed on first examination, eight on re-examination, and four failed entirely. During the year 1914 twenty-four were examined; fourteen passed on first examination, four on re-examination and six failed entirely. There are at present 464 licensed embalmers in the State.

BOARD OF EXAMINERS IN OPTOMETRY.

The Legislature of 1913 passed an Act providing for a Board of Examiners in Optometry, to be appointed by the State Board of Health on nomination by the Connecticut Optical Society. In compliance with this law R. N. Johnquest of Stamford, C. M. Parker of New Haven, J. A. Mas-

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terton of Middletown, W. S. Todd of Hartford, and G. A. Comstock of Ansonia, were appointed members of the Optometry Board.

Their annual report to the State Board of Health has been made as required by law and shows that 203 applicants received licenses under the exemption clause, having been in continuous practice for two years previous to the passage of the law. Fourteen applicants in this class were refused certificates, fifty-eight persons were admitted to practice after examination and three failed to pass.

The Board believes that the benefits of the law are noticed in the absence of peddlers and incompetents from our boundaries and in its financial statement calls attention to the fact that the Board is entirely self-supporting and turned $581.72 into the State Treasury during the past year (1914).

BARBER SHOPS.

As provided in Chapter 130, Public Acts of 1903, the State Board of Health at a meeting held May 22, 1914, approved the following Rules and Regulations governing the Sanitation and Inspection of Barber Shops in the State of Connecticut.

INSPECTION.

Regulation 1. All Barber Shops shall be open for inspection at any time during business hours to the State Board of Examiners of Barbers.

GENERAL SANITATION.

Regulation 2. All barber shops, together with their furniture, fixtures, instruments and utensils, are required to be kept in a clean and sanitary condition. Each and every barber working in any shop must keep themselves and their wearing apparel clean, and in a sanitary condition.

INSTRUMENTS.

Regulation 3. All shaving mugs and lather brushes must be thoroughly cleaned with hot water before using. All pincers, needles, the contact cup or pad of vibrating or massage machines, and all other instruments, shall be sterilized either by immersion in alcohol of at least 60 per cent. strength, or in formaldehyde solution, or one per cent. solution of tricresol, after each separate use. Combs and brushes shall be thoroughly cleansed at all times with soap and water.

TOWELS.

Regulation 4. Clean towels, whether dry or hot, shall be used for each person served. Towels shall not be used for more than one person until laundered.

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ALUM.

Regulation 5. Alum or other material used to stop the flow of blood shall be applied only on a clean cloth or towel or other clean appliance. The use of styptic sticks or pencils is prohibited. All astringents for cauterizing bleeding or for other purposes must be used in powdered or liquid form.

POWDER PUFFS.

Regulation 6. The use of powder puffs, sponges and finger bowls are prohibited, and no barber shop shall keep them on the working stand.

HANDS.

Regulation 7. Every barber shall thoroughly cleanse his hands immediately before serving each customer.

RAZOR STROPS.

Regulation 8. Any barber when shaving any person having an eruption on the face, of any kind or nature, shall be required to disinfect the razor, as hereafter provided in Regulation 11, before stropping.

AIR AND WATER.

Regulation 9. Every barber shop shall be well ventilated and provided with running hot and cold water, if so situated that they can obtain running water.

SLEEPING ROOM.

Regulation 10. No barber shop shall be used as a living, cooking or sleeping apartment.

SKIN DISEASE.

Regulation 11. After serving persons who have eruption on the face or scalp, or are affected with contagious skin disease, all metal tools and instruments, brushes and combs that have been used on such person shall be thoroughly sterilized by boiling water or the use of formaldehyde or tricresol before being used again, and the hands shall be thoroughly cleansed with disinfecting solution, and towels and damp cloths used shall be thoroughly boiled before being laundered.

CONTAGIOUS DISEASE.

Regulation 12. No person suffering from any infectious or contagious disease shall be served in any barber shop.

DISINFECTION OF TOOLS, ETC.

Regulation 13. All tools or instruments used by barbers outside of the shop in serving any person suffering from infectious or contagious dis-

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eases or used on a corpse are required to be thoroughly and efficiently disinfected with formaldehyde solution or tricresol immediately after using the same.

BARBERS MUST BE FREE FROM INFECTIOUS DISEASE

Regulation 14. No person suffering from any infectious or contagious disease, including tuberculosis, shall serve any person in any barber shop; no proprietor of any barber shop shall knowingly retain in his employ any barber who is afflicted with any venereal or other contagious disease. Every barber while on duty in his shop shall be neat and clean in his personal appearance.

GOOD QUALITY.

Regulation 15. All soap, perfume, bay rum, witch hazel and other toilet articles, and all antiseptic solutions, shall be of good quality.

RULES POSTED.

Regulation 16. These rules and regulations shall be conspicuously displayed in each barber shop in Connecticut.

PENALTY.

Any peron violating any of these rules and regulations shall, upon conviction, be fined a sum not to exceed fifty dollars ($50).

FRED W. NEUMANN, *President.*
JOHN C. HEALY,
MICHAEL CRATTY, *Sec'y and Treas.,*
State Board of Examiners of Barbers.

THE BOTTLING AND SALE OF DRINKING WATER.

The General Assembly of 1913 in Chapter 126 of the Public Acts, placed the business of bottling and selling drinking water in charge of the State Board of Health and provided for the licensing of dealers, where water was found free from contamination and premises in a sanitary condition with proper facilities for cleansing bottles. Under the provisions of this Act eighty dealers were licensed in 1913, and eighty-three dealers in 1914. Three applications have been refused and one license revoked, while several dealers have been obliged to change their springs or make improvements on their premises before they were able to secure a license. The inspections and examinations have fully demonstrated the wisdom of the law.

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The following are the dealers who have been licensed since the law went into effect August 1, 1913.

No. of License	Firm Name	Location of Spring	Applicant
1	Hi-Land Spring Water Co.,	5 Spring St., Torrington,	C. E. Smith
2	W. F. Flynn,	Torrington, Newfield Road,	W. F. Flynn
3	Oronoque Springs,	Oronoque (Stratford),	J. H. Tomlinson
4	Mohawk Spring,	West Torrington,	A. A. Waldron
5	Powhotan Spring,	Fairfield (Stratfield District),	G. R. Godfrey, Bridgeport
6	Rob't E. Lockwood, Revoked	Stamford Ave., No. Stamford,	R. E. Lockwood, Springdale, Route No. 55
7	B. H. Richardson,	Harwinton,	B. H. Richardson, 29 Perkin St., Torrington
8	T. J. Stone	168 Migeon Ave., Torrington,	T. J. Stone
9	James H. Monroe,	Lakeside, Town of Morris,	J. H. Monroe
10	Highland Spring Water Co.,	Fairfield,	W. M. Lane, 645 Warren St., Bridgeport
11	Camp Meeting Spring Water Co.,	Milford,	Rogers Bros.
12	Diamond Bottling Works,	Waterbury,	E. W. Ely, Mgr.
13	W. D. Smith,	New Britain,	W. D. Smith, New Britain
14	Bailey Natural Spring Water Co.,	Mill Plain Road, Danbury,	H. Ray Bailey
15	Great Hill Spring,	Great Hill, Middlebury,	R. M. Fenn
16	Ellis Mountain Spring Water Co.,	Danbury,	H. O. Ellis, R. D. No. 21
17	Bartley & Clancy,	Driven well, 96 White St., Danbury,	Bartley & Clancy
18	Rock Spring Water Co.	Stillson Spring, Bridgeport,	R. T. Fairchild, 413 John St.

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No. of License	Firm Name	Location of Spring	Applicant
19	Stratfield Spring Water Co.,	Toilsome Hill, Fairfield,	Horace Chase, Bridgeport
20	East Mountain Spring Water Co.,	Prospect,	Mrs. E. A. Patterson
21	Mammanasco Spring,	Ridgefield,	Chas. Holly
22	T. W. Bartley,	9 Balmforth Ave., Danbury,	T. W. Bartley
23	Satan's Kingdom, Spring Water Co.,	Pine Meadow, New Hartford,	Wm. Doran, 65 R. R. Avenue, Greenwich
24	Mrs. L. DeK. Livingston,	Clapboard Ridge, Greenwich,	Mrs. Livingston
25	Arethusa Spring Water Co.,	Peace St., Seymour,	R. T. French
26	Mohegan Spring Water Co.,	Norwalk (Cranberry)	John S. Bates, Jr.
27	Simon McNerney,*	Coalpit Hill, Danbury,	S. McNerney
28	Woodmont Spring Water Co.,	Milford,	C. M. Smith, Woodmont
29	Beaver Spring,	Derby,	H. W. Owens, Ansonia
30	Buttress Spring Water Co.,	Westville,	J. T. Newton, 2018 Chapel St., New Haven
31	East Hill Spring Water Co.,	Derby,	C. H. Curtis, Box 333
32	Crystal Spring Water Co.,	Derby Neck,	J. T. Cullen, Box 71, Derby
33	Silver Spring,	Sentinel Hill, Derby,	Walter B. Lodge, 363 Derby Ave., Derby
34	Indian Spring,	55 Congress Ave., Shelton,	R. S. Little
35	Northridge Spring Water Co.,	Greenwich,	E. W. Russell
36	The Hampshire Co.,	Hampshire Farms, Fairfield,	M. E. Brewster-Greene, R. D., No. 2, Bridgeport
37	Tuscarora Spring Water Co.,	Weed Ave., Springdale,	P. C. Farrell, R. D., No. 55, Stamford

*License not renewed in 1914.

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No. of License	Firm Name	Location of Spring	Applicant
38	Rock Ledge, Spring Water Co.,	Montowese,	R. B. Hemingway
39	Hemitage Spring Water Co.,	Near Peters' Rock, Montowese,	Lemuel S. Bottume
40	Quinnipiac Spring Water Co.,	Montowese,	J. F. Higgins, Mgr., New Haven
41	LeRoy C. Beecher,	Woodbridge,	L. C. Beecher, Westville
42	Dr. B. A. Bryon,*	Ridgefield,	Dr. Bryon
43	Crescent Hill Spring,	Beacon Valley, Naugatuck,	M. S. Baldwin
44	Aqua Pura Springs,	Occum (Driven Well),	E. J. Tetrault, Versailles
45	Harold Hall,	Mountainville Spring, Danbury,	Harold Hall, No. 95 Main St.
46	C. H. Winchester,	Newington (Basswood Spring),	C. H. Winchester
47	The Elco Beverage Co.,	Bristol,	B. H. Goodwin
48	Cherry Hill Spring Water Co.,	Hamden,	B. H. Hosley, 348 Howard Ave., New Haven
49	H. M. Bacon,	No. 43 Morris St., Hartford,	H. M. Bacon
50	W. E. Clark,	Hosmer Mountain, Willimantic,	W. E. Clark, No. 215 Mountain St.
51	The Gra-Rock Spring Water Co.,	Canton,	H. R. Lathrop, Treas., Hartford
52	Albert P. Vincent,	Danbury,	A. P. Vincent, R. D., No. 20
53	Pequot Mineral Springs,	Old Mystic,	E. Lamphere & Son
54	Hillside Spring,	Johnson Ave., Meriden.	Geo. W. Patz
55	Tonica Springs Co.,	Highland Park, Manchester,	L. W. Case, Treas.
56	Gray Bros.,	New Canaan,	Gray Bros.

*License not renewed in 1914.

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No. of License	Firm Name	Location of Spring	Applicant
57	Live Oak Spring,	Buckwheat Hill, Meriden.	R. W. Sherman, Station A, Meriden
58	Venture Rock Bottling Works,	Pawcatuck,	A. W. Wilbur, Stonington
59	Mrs. W. E. Wilcox,	Westfield Dist., Middletown,	Mrs. Wilcox, Box 676, Meriden
60	M. J. Fogg,	East Mountain, Waterbury,	M. J. Fogg
61	P. J. George,	Lakewood Road, Waterbury,	P. J. George
62	Jean Hornig,*	Danbury,	Jean Hornig, 22 Elm Street
63	Crescent Water Co.,*	Oakville,	E. R. Clyma, Mgr.
64	Solus Spring Water Co.,	Beacon Falls,	Antonia Vaccia, Derby, Conn.
65	Varuna Spring Water Co.,	No. Stamford,	J. G. Haughton, Secy.
66	Chas. E. Anthony,	Whitmore Park, Willimantic,	C. E. Anthony, 52 Jackson St.
67	Wawbeek Spring Water Co.,	Suffield,	W. E. Ford
68	The M. W. Booth Co.,	Parker Ave., Meriden,	R. B. Booth, 48 East Main St.
69	Campo Bros.,	Hyde Park, Stafford Springs,	Campo Bros.
70	Geo. H. Bard,	Danbury (Great Plain),	Geo. H. Bard, 48 Balmforth
71	Wm. C. Norton,	Kensington,	W. C. Norton, Box 76
72	A. W. Gilbert,	Westfield Dist., Middletown,	A. W. Gilbert
73	Kelsey Bros.,	Middletown,	Kelsey Bros.
74	Wallingford Drug Co.,	Pond Hill Dist., North Haven,	Wallingford Drug Co., Wallingford
75	Harry Dick & Co.,	Danbury,	Harry Dick & Co.

*License not renewed in 1914.

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No. of License	Firm Name	Location of Spring	Applicant
76	Showtuck Spring Co.,	Norwich Town,	A. H. Gulliver
77	G. H. Harris,	Staddle Hill, Middletown,	G. H. Harris
78	James H. Blackler,	Westerly, R. I.,	James H. Blackler
79	Allen Water Co.,	Groton,	Miss A. Allen
80	Edward Zeigler,	Litchfield,	Ed. Zeigler
81	Chas. H. Kenyon,	Eastern Point, Groton,	C. H. Kenyon
82	Thos. W. Avery,	Groton,	Thos. W. Avery
83	Granite Rock Spring Bottling Works,	Higganum,	C. B. Carlson
84	Stillman Spring Water Co.,	Montowese,	C. E. Miner
85	Washington Springs Co.,	Stamford,	G. M. Roberts
86	Hillside Spring Water Co.,	Sharon,	J. S. Chaffee
87	Pequot Spring Water Co.,	Glastonbury,	J. C. Lydiard
88	Albert A. Beach,	New London,	Albert A. Beach

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SPECIAL REPORTS AND ADVICE TO OFFICIALS AND INDIVIDUALS

Questions regarding a great variety of health matters are continually coming to this Board. A great many letters are written in reply and many personal inspections are made by committees of the Board or its employees. A few letters and reports are printed here as samples of this work. Some also relate to topics of public interest and may serve to answer questions that present themselves to others.

GROTON WATER SUPPLY.

January 19, 1913.

Board of Water Commissioners,
Groton, Conn.

GENTLEMEN:—Replying to your letter under date of January 18th, I would say that the use of copper sulphate for the destruction of typhoid germs is not commonly used and the method you suggested would not be practicable in any case. All wastes from the typhoid patients should be properly cared for and removed so that no portion will get into the water supply. If your reservoir is large enough to insure at least thirty days' storage before infected water can reach the borough mains there will be little chance for serious results. If the storage period in the reservoir is not adequate for such protection and you have reason to believe that the stream has been infected, disinfection of the supply at the intake pipe by means of chloride of lime will be effective in destroying any disease germs which may reach that point of the supply. The danger does not lie in the possibility of the germs getting into the stream and there remaining dormant for a time, to develop later, as you suggest, because typhoid germs will not live for any great length of time in water under outdoor conditions, and the danger, if infection has occurred, will lie in the possibility of their being carried quickly to the borough mains in which case trouble would occur in the near future.

If you consider that there is a serious public health problem involved I would suggest that you write or telephone and we will see that an investigation is made.

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HYPOCHLORITE TREATMENT FOR PUBLIC WATER SUPPLY.

January 24, 1913.

MR. P. L. SCHELLENS, *Secretary,*
Board of Water Commissioners,
Groton, Conn.

DEAR SIR:—Replying to your letter under date of January 22nd with reference to the quantity of chloride of lime to be used for disinfection at the intake pipe, I would say that half a part per million or about twelve pounds per million gallons of water would be sufficient, but in order to apply this it is necessary to put in solution tanks and apparatus for regulating the flow of the chloride of lime solution, to the flow of water entering the mains and this treatment must be continued so long as you suspect the water is infected.

If, as you state, there is no reason to believe that the stream has actually become polluted; it would not be necessary to install such a plant, but these plants are not expensive and are being installed in numerous places where accidental contamination is likely to occur, as they can be put into operation on short notice and are very effective in the destruction of disease germs. With reference to your postscript regarding the life of typhoid germs in water I would say that it is usually considered advisable to have at least a month or six weeks storage of the water under all conditions of rainy and dry weather periods. If you do not have this storage in your supply there may be times following heavy rains or spring freshets, when accidental infection may be carried quickly through the reservoir to the intake, and it is just such conditions which must be guarded against in order to avoid such epidemics as that which occurred at New Haven in 1901 and at Torrington in 1911.

There are three general methods, or combinations of those methods which are accepted as efficient safeguards of water supplies, as follows: Adequate storage such as I have already suggested, filtration by slow sand filters or what are known as mechanical filters, and disinfection, ordinarily with chloride of lime. Combinations of these such as storage and chloride of lime and other possible combinations are frequently used, the method or combination being determined by local conditions. Any of these methods involve more or less expense but the expense involved for the proper method, under given local conditions, is always a paying investment if it guards against such epidemics as those already referred to. As I remember the conditions at your plant, chloride of lime treatment would probably be the least expensive and would answer your purposes for the present but that would have to be determined definitely by more careful study of the conditions. If you decide that something should be done along these lines it would be well to have plans drawn up for the work, with an estimate of the cost, and I will be pleased to look them over and assist you if possible.

INSPECTION OF PROPOSED ADDITION TO THOMPSONVILLE WATER SUPPLY.

February 20, 1913.

MR. MARVIN C. BIRNIE, *Treasurer,*
Thompsonville Water Company,
No. 127 Mill Street,
Springfield, Mass.

DEAR SIR:—The undersigned committee of the State Board of Health would submit the following report of inspection of the watershed and

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plans of the proposed addition to the Thompsonville water supply which we made at your request on February 4, 1913.

The watershed which it is proposed to take is in the town of Enfield, a little to the south and east of the present pumping station and includes what is known as Grape Brook, across which it is proposed to build a dam near that of the present ice pond.

This watershed is small and for that reason more easily controlled, with only a few dwellings on the north and south edges. The drainage from these buildings should be carried off the watershed or water-tight vaults should be built which should be emptied at suitable intervals under the supervision of the Water Company.

The analysis of the water from the brook now shows slight contamination which probably comes from pasture land. In constructing the main pipe line from the reservoir to the wells of the present pumping station the grade should be so laid out as to permit of the location of a filtration plant at a point above the wells, and if it is found in the future that sedimentation and storage of the water in the reservoir, together with sanitary supervision of the watershed, fails to remove the present contamination we will expect your company to install a filtration plant for the purification of this supply.

WATER ANALYSIS.

May 21, 1913.

MR. A. D. ZABRISKIE,
Health Officer,
Preston, Conn.

DEAR SIR:—Enclosed please find report on a sample of water submitted by you from a well on the property of L. M. K. It does not seem to the writer that this is a public health problem but rather one to be taken up by a plumber. Many surface and ground waters contain dissolved oxygen and other harmless chemicals which have a tendency to dissolve iron from the water system, and especially the hot water portion of the system. It frequently happens also that when two metals such as brass and iron are united in the system, electrolytic action is set up between these two metals causing a rapid dissolving of the iron. I have no means of knowing the exact cause of the trouble in this case but I would suggest that you call in some one acquainted with those troubles and have him look over the system.

The results of the analysis are of no value in determining the sanitary quality of the water, as the sample submitted simply showed the condition of the water in the hot water tank.

WILLIMANTIC WATER SUPPLY.

June 20, 1913.

MR. H. C. MOULTON,
Supt. Willimantic Water Works,
Willimantic, Conn.

DEAR SIR:—I have your letter of the 17th inst., and am pleased to learn that studies of your water supply are under way, and while the elimination of sources of contamination on your watershed are of value in reducing the possibility for serious contamination, the installation of some more definite protective measure should be given consideration. If you could

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eliminate every source of contamination on your drainage area and keep all hunters, fishermen, etc., away from the streams there would be no danger in the use of your supply. As your drainage area covers something over 160 square miles, such improvements are manifestly impracticable and protection against accidental contamination can be obtained only by the adoption of one or more of the methods now commonly used under such conditions, namely: The construction of a reservoir large enough to allow sedimentation, sunlight, temperature and other bactericidal influences sufficient time to eliminate any accidental infection before the water reaches the consumer; the installation of slow sand or mechanical filters which will purify the water as it comes from your present reservoir; disinfection of the water; or finally, some combination of these methods the plan, of course, depending upon relative costs under existing conditions.

With your present equipment you are practically using a running stream and while, as I have said, the elimination of existing sources of contamination reduces the danger of infection by just so much, yet the bacterial self-purification of streams is not nearly so great as is commonly supposed among laymen and the serious epidemics which have resulted in many cities, throughout the country, using water supplies under similar conditions is sufficient evidence that more efficient safeguards are necessary. The fact that you have not suffered from a typhoid epidemic in the past is due to the fact that people on the watershed now contributing to the contamination have not suffered from typhoid fever and not to any protective measure to guard against this possibility. The water analyst can find evidence of contamination in a supply but he has no means of knowing when people contributing to that contamination on the watershed are likely to become infected with typhoid germs and so transfer the infection to the water supply. He can only state that the general contamination is evident and that the use of the supply under such conditions must represent a constant danger to the people using that water. For the above reasons, I believe that protective measures other than the elimination of existing sources of contamination on the watershed should be given more serious consideration.

REPORT ON SANITARY INSPECTION AT PLAINFIELD.

August 29, 1913.

HON. GEORGE E. HINMAN,
County Health Officer,
Willimantic, Connecticut.

DEAR SIR:—I wrote you that I planned to go to Plainfield on Saturday, the 16th. I found on telephoning to your house that you were away for a few days, but was able to make an appointment with the local Health Officer, Dr. Chase.

The matter under consideration was the sewage disposal of the Lawton Manufacturing Company from its mill and tenements at Plainfield, which is being discharged unpurified into Mill Brook, so-called, to the discomfort of the residents of Packerville about two miles below. At Packerville there are a series of three mill ponds made by damming the brook, which are used for power purposes by the Cutler Mills Company, and the filth accumulating in these ponds is, to say the least, a source of annoyance to the people of the village, especially those living on the banks of the lower pond. The well water used by the four tenements just above the mill can be little better than partly filtered sewage. The fact that the sanitary conditions about these tenements is not of the best does not alter the liability of those responsible for the pollution above.

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On the property of the Lawton Manufacturing Company at Plainfield, sanitary conditions are the best. The factory and two hundred or more tenement houses belonging to it are new, built in regular rows and well sewered, there being a main sewer emptying into the brook from the property on the west side of the railroad, and another a short distance below it coming from the east. There is available ground and plenty of material at hand to construct sand filters and the present sewers seem to me to have been planned with the idea of building a disposal plant, when the inevitable day arrives that it must be done.

This turning of such a mass of crude sewage into a small brook to the detriment of those living below, is a rank injustice and an aggravated instance of other similar cases in the state demanding legislation to stop it. As an attorney you know the rights of the riparian owners on this stream, but to remedy the matter as health officials, I presume you would agree with me that it would be necessary to show that this filth is detrimental to the health of the people at Packerville, in that it has, and is, causing sickness and ill health among the residents. This you would have to prove by the local physicians and people. I am afraid that my general opinion would not aid you. I consider the present conditions, as I have described them, not only a nuisance, but an outrage on the people who must suffer from them and I will most gladly assist you in relieving the situation, if there is any way that you can suggest.

TYPHOID FEVER INVESTIGATION AT SEYMOUR.

November 21, 1913.

HON. C. E. HOADLEY,
County Health Officer,
New Haven, Conn.

DEAR MR. HOADLEY:—Concerning my visit to Seymour with you yesterday for the purpose of looking into the typhoid situation there, I would say that I find in 1912 there were twenty-five cases of typhoid reported in Seymour and none in 1911, while so far this year there have been ten cases reported, so that the fever is not as prevalent as it was last year, although I believe it has been more fatal.

Of the ten cases occurring this year one was reported in January, one in September, one in October and seven during the present month. Concerning the nine cases which have occurred this fall, four were in what is known as the Hill district and five in the lower or poor part of the town, so that the cases are quite well scattered.

This outbreak cannot be traced either to milk or the water supply and it is probable that these are all secondary cases to those of last year, since in any number of cases there is liable to be some who carry the active infection in their stools for some time after recovery, the infection being conveyed through the medium of flies.

From my tour of the village with you and Mr. Bassett, and from what I saw after leaving you, I found some very unsanitary conditions which, if not the cause of the present outbreak, are liable to be the cause of future trouble unless remedied.

Without speaking of the places we visited together, I would call your attention to some others which I trust you will investigate when you visit Seymour on Tuesday—as I believe you propose doing.

On Main street, in the rear of the Odd Fellows' building, there is a tenement belonging to the Sanford estate. This building contains ten tenants, most of whom also take boarders, so that it is estimated about sev-

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enty people live there. The building is in a very dilapidated condition and the only water supply is from a faucet in the cellar which is in a filthy condition. The toilets are in the yard and their condition—as well as that of the yard—beggars description, which you can see for yourself when you visit the premises. The business men nearby on Main street are very much incensed because something is not done about this place and I think their complaint justifiable.

Another property I looked at was on Bank street; this also belongs to the same Sanford estate and is occupied by the Rogol Grocery Co. The only toilet accommodations for this store and the tenement above is an outhouse without roof and with very little floor. People apparently do not dare trust themselves in this building which is evidenced by the condition of the ground about it. Bank street has a sewer and there seems to me to be no good reason why this property should not be connected with it.

On the east bank of the Naugatuck river, on the Oxford road near the covered bridge, there are a number of toilets which are very unsightly and must be both offensive and dangerous during the warm weather.

As I have said, such conditions as these may not be the cause of the present outbreak of typhoid but if they are not they are very likely to cause trouble in the future, and I trust you will be able to remedy some of them at least. The people of Seymour are somewhat stirred up over the high infantile mortality there last summer, and taken with the present typhoid excitement it would seem to me a good time to start a clean-up campaign.

THE HARVESTING OF ICE FROM WILLIMANTIC RESERVOIR.

December 8, 1913.

MR. GEORGE E. HINMAN,
County Health Officer,
Willimantic, Conn.

DEAR SIR:—This Board has received from you a letter relative to the harvesting of ice on the reservoir from which the city of Willimantic takes its drinking water, stating that the city intends to enlarge its present ice house from a capacity of one thousand tons to a total capacity approximating nine thousand tons and against this, complaint has been made to you as county health officer. You ask the opinion of the State Board of Health on the following questions:

"First, if the use of the land and buildings in question for the storage and distribution of ice is a source of pollution to the water stored in said reservoir, or if the water or ice is liable to pollution thereby; and

Second, if the cutting and harvesting of ice on said reservoir is a source of pollution to the water stored in reservoir, or if said water is liable to pollution thereby?"

This reservoir is made by a dam across the Nachaug river a short distance above the city, from here the water is pumped to a small distributing reservoir and served to the public without purification. The watershed of the Nachaug river and its tributaries covers an area of 162 square miles, with a population of more than 6,000 people. None of this watershed is owned or controlled by the city and there is unrestricted boating and fishing on the reservoir.

In our analysis of this water colon bacilli have been repeatedly found, and by vote of this Board April 24, 1912, the authorities of Willimantic

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were notified of the fact and their attention called to the necessity of securing a pure supply.

Ice has now become one of the necessities of life and its harvesting near the place of consumption very much decreases its cost, so that the question has an economic side that should be considered. It is not uncommon in this state to find ice harvested from lakes and ponds used as public water supplies; this is the case in both Bridgeport and New Haven and there has been little objection to such use.

The horses used in harvesting ice are often mentioned as a source of pollution, but this is not dangerous as none of the so-called water borne diseases common to man are found in the horse, and although their filth is, of course, objectionable, such pollution of the water would not cause any sickness. Human pollution is most to be feared, but under rigid supervision this could be reduced to a minimum, and with the adoption of the recommendations already made by this Board for protecting the public from the use of contaminated water, there would be little or no danger to the public, but unless the strictest sanitary precautions are to be observed the project had better be abandoned.

Concerning pollution on the surface of the ice, this danger is commonly avoided by planing off an inch or two of the surface as it is carried up the incline into the ice houses.

REPORT ON INSPECTION OF THE SEWAGE DISPOSAL BEDS AT LAKEVILLE SCHOOL FOR IMBECILES

December 11, 1913.

DR. GEORGE BLUMER,
President Board of Trustees,
Conn. School for Imbeciles,
Lakeville, Conn.

DEAR DOCTOR BLUMER:—Following your request we have examined the sewage disposal beds at the School for Imbeciles at Lakeville and would comment as follows:

The location of the beds is not ideal, as they are so shaded by trees and the overhanging cliff that the sunlight can only reach them a short time each day. The surface of the beds is very irregular, preventing an even distribution of the discharge of the septic tank. The filtering media is too coarse for this method of disposal while the time of retention on the beds is too short to accomplish effective purification. The area of the beds is not large enough for the number of people in the institution. The effluent, though turbid in appearance, had apparently not discolored the water of the lake or caused deposits to form on the bottom, and when tested for putrescibility it had a stability of 100.

The blow-off pipe from the septic tank is in such a position that contamination of the waters from this is easy through carelessness of the employees.

Examinations of the effluent and the lake water near the outlet have shown the presence of the colon bacillus, so that we would consider the plant in its present condition a possible menace to the health of the community, as long as the water company continues to use the lake as a supply. It is not necessary to remind you that being a state institution it is all the more important in matters of this kind that the plant be above suspicion.

Three possible solutions of the problem suggest themselves:

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First:—The increase of the area of the beds and the substitution of a better grade of sand in them.

Second:—The sterilization of the effluent.

Third:—The construction of an outfall sewer to some low spot below the factories and the establishing of rough contact beds there.

Neither of the first two would probably satisfy the townspeople and the cost of the third would be prohibitive unless there was co-operation between the town and the institution.

THE KILLING OF FISH IN THE SEBETHE RIVER.

May 4, 1914.

MR. JOHN M. CRAMPTON, *Supt.,*
Fish and Game Commission,
Hartford, Connecticut.

DEAR SIR:—Replying to your inquiry concerning the killing of fish in the Sebethe River at East Berlin, Conn., I would say that with Mr. James A. Newlands, state chemist, I visited East Berlin and Westfield on April 16th, at which time there was no evidence of any unusual conditions other than high water caused by the heavy rain of the previous day. A conversation with Mr. John DeMore, of East Berlin, brought out the statement that a number of dead fish were seen in the river near the home of Mr. E. J. Morgan, of East Berlin, on Sunday, April 12th. At Westfield the agent at the trolley station stated that he had not personally seen any dead fish, but had heard remarks during the week to the effect that the foreigners in that locality had collected considerable numbers on Monday, April 13th. He also stated that the fish had been killed in the stream at more or less frequent intervals since the time of the previous investigation of the Board in May, 1910.

It was evident from the condition of the stream at the time of our visit, that an analysis of the water would show nothing that would assist in bringing to light the cause of this trouble. During the previous investigation contamination of the stream with certain manufacturing wastes was suspected, and inquiries were made at some of the manufacturing concerns in the city of New Britain, but no definite information was obtained.

While conclusive evidence is not available at this time, it seems quite probable that the trouble is due to pollution of the water with concentrated waste liquor from one or more of the manufacturing industries farther up the stream. The contamination is evidently intermittent, and it is worthy of note that in this and the former investigation Sunday was the day of the week when the effect on the fish was first noted, a result which would be expected with a Saturday night discharge of waste from the factories referred to.

In order to determine the nature of the contamination which is so detrimental to fish life, we will try to arrange with some one in East Berlin to collect samples of the water as soon as possible after the fish begin to show the effects of the abnormal pollution.

REPORT ON THE THOMPSONVILLE WATER SUPPLY.

July 10, 1914.

The Committee on Water Supplies and Sewage of the State Board of Health at the request of the local health officer visited Thompsonville on July 6, 1914, relative to the quantity of the public water supply.

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In company with the health officer, selectmen and district committee the water works were visited. Thompsonville is supplied with water from a standpipe of 376,000 gallons capacity which is filled three or four times a day by pumping from two reservoirs at the north end of the town. These reservoirs are connected by a pipe line to a well house which is fed by springs and is situated in a valley about half a mile north of the pumping station. From a superficial inspection there seems to be no storage available on this site.

It was stated that for some years there has been a shortage of water, particularly at critical seasons of the year, and impelled by the urgings of the citizens of the town the water company about two years ago investigated several sites for a new supply. The one considered most feasible at that time was situated on Grape or Gray Brook, east of the highway and about midway between the pumping station and the standpipe. This brook has a watershed of about one square mile and should provide, except during seasons of excessive drought, a supply of about 80 gallons per capita on an estimated population of 12,000. Its elevation is such that it would necessitate pumping as at present. It is located close to a main highway and several dwellings are within or close to its shed. The probability of pollution from these sources is almost certain.

It was furthermore stated that for a number of months the brook is practically dry; also, that there is very likely to be a considerable increase in population, contingent on the mills being assured a pure and adequate supply of water for their operatives.

It is the opinion of your committee that the present supply is not adequate and that any investigations toward increasing the supply should have in mind the providing of at least one hundred days' storage on a basis of one hundred gallons per capita and a location which can be protected from present or future pollution.

REPORT ON THE INSPECTION OF A SEWER IN STAMFORD.

On November 12th, 1912, Dr. J. H. Townsend, County Health Officer Hill and myself went to Stamford at the request of Mr. W. A. Clark, of the Remington Oil Engine Co., to investigate the matter of the overflow of the trunk sewer on Pacific street and the deposit of sanitary sewage in the highway and on the grounds of the oil engine company.

Mr. Clark claimed that he had complained to the town and city Health Officers, but that they could not or would not furnish him any relief. We found the sewage standing in the sewer to the top of the manholes and the sludge spread out over the street as represented by Mr. Clark. We visited the pump well and found the sewage in the well standing six or seven feet above the end of the inlet pipe. The grades of the sewers are very flat and we believe that the fact of the sewage standing so high in the pump well was largely the cause of the overflow from the sewer. We were not able to finish our investigations on November 12th, and on December 11th, we again visited Stamford. The trouble was partly cured. The sewage in the pump well was maintained at a lower level and the sewage had ceased to overflow near the oil engine company. The city officers said the overflow was caused by a break in the sewer.

We visited the City Engineer's office and saw the plans and profiles of the sewers. The system was built by Col. Waring 25 or 30 years ago and although the sewers and pump works were ample for that time the city has now outgrown the works and we believe that only a reconstruction of the entire works will bring any permanent relief.

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The city has now a population of 27,000; of this number 18,000 or more are tributary to the main trunk sewer 24 inches in diameter on a very flat grade. The outfall sewer from the pump well is only 20 inches in diameter or about two-thirds of the capacity of the 24-inch influent sewer. We believe that in wet weather neither the sewers nor the pumping plant are of sufficient capacity to care for the sewage and that the system should be rebuilt after amended plans.

Respectfully submitted,

T. H. McKENZIE, *Chairman,*

Committee on Water Supplies and Sewerage.

INSPECTION OF CEDAR SWAMP RESERVOIR, BRISTOL.

Naugatuck, Conn., Oct. 13, 1914.

DR. J. H. TOWNSEND,
Secretary State Board of Health,
Hartford, Conn.

DEAR SIR:—As requested, I visited Bristol on October 1st. I met Mr. Steele, the city clerk, and accompanied by Mr. Hull of the Bristol city council, inspected the Cedar Swamp reservoir.

This reservoir, which is tributary to Mad river, is owned or controlled by the Scovill Mfg. Co. of Waterbury.

The site was originally a cedar swamp but the lower part has been flooded for at least 45 years. The dam was raised three feet about six years ago, forming a shallow reservoir about 140 acres in area with a depth of less than five feet over the larger part. At the time of our visit the reservoir was empty except a pool of about a half acre near the outlet as the water had been drawn off for use by the Scovill Co. some weeks before.

The bed of the reservoir is covered with black mud out of which the stumps of the cedars still stand and is very unsightly, but I found no bad odors and very little evidence of dead fish or anything which I should judge to be detrimental to health or even much of a nuisance. Inquiry of nearby residents brought no complaint of a nuisance. There are, however, about a dozen cottages or bungalows which have been built near the reservoir for summer residences and to the occupants of these the drawing off of the water is objectionable from an aesthetic point as it makes an unsightly waste of what must be a beautiful lake when the water is at its full height. There might possibly be grounds for civil damages to the owners of these bungalows but I have not attempted to ascertain the rights of the Scovill Co. or the abutting owners as in my judgment there is not sufficient evidence that the public health is affected to warrant further investigation.

Yours truly,

GEORGE C. HAM, *Sanitary Inspector.*

INSPECTION OF THE SOUTH MANCHESTER WATER SUPPLY.

The borough is supplied by the South Manchester Water Company, whose works were begun in 1870. There are now three reservoirs in use.

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TAYLOR RESERVOIR.

Taylor Reservoir, constructed in 1870, is about one and one-half miles east of the borough. It has a watershed of about .9 of a square mile, all of which is owned by the water company. The reservoir has a surface area of 3.4 acres, with a capacity of five million gallons, and an average depth of about four and a half feet. There are no houses on the watershed.

PORTER RESERVOIR.

Porter Reservoir, built in 1890, is about one and three-fourths miles northeast of the borough. It has a surface area of 7.3 acres with a capacity of thirty-two million gallons, with an average depth of about 13.4 feet. The bottom of the reservoir was cleaned out a few years ago and the sides are riprapped entirely around the pond. There are no houses on this drainage area.

HOWARD RESERVOIR.

Howard Reservoir, located about two miles northeast of the borough, was built in 1904. This reservoir is the storage supply for Porter reservoir. The total drainage area for the two supplies is 1.4 square miles. Howard Reservoir has a surface area of 21 aces and a capacity of 124 million gallons with an average depth of about 18.1 feet. There are three houses on the watershed with a total population of fourteen or about ten per square mile. The company serves a population of about nine thousand. A large portion of the drainage area is owned by the water company and the three houses on the Howard Reservoir watershed are all at a considerable distance from any running water. The following is an account of the conditions found at these houses. The houses are numbered to correspond to the numbers locating them on the accompanying map.

No. 1. Carlos Ruggles place. Three in family. One horse on the premises. Shallow vault under privy. Sink drains on the ground. Health of family good. No brook nearby.

No. 2. W. E. Howe place. Five in family. One horse and six cows on premises. Shallow vault under privy. Sink drains to a cesspool. Health of family good. No brook near.

No. 2. Chas. Sumner place. Six in family. Twelve cows on the premises. Shallow vault under privy. Sink drains on the ground. No brook nearby.

GENERAL CONCLUSIONS.

The three houses referred to above are all on the extreme eastern ridge of the drainage area as shown on the accompanying map and do not appear to endanger the supply under existing conditions.

Attention should be called to the slight danger which results from small storage capacity in the distributing reservoirs, especially with reference to the Taylor Reservoir. During low water stages it is quite possible that brook water accidentally contaminated by hunters or others while on the watershed might be carried through the reservoir to the mains before sedimentation, sunlight, temperature, and the other purifying agencies of nature had time to eliminate the dangerous elements in the water. This danger, however, has been materially reduced by the very great care taken

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by the company in safeguarding the drainage areas. The entire drainage area tributary to Taylor Reservoir is owned by the company and the houses on the other area, with the exception of the three previously referred to, have been bought and removed. A caretaker is employed on the watersheds of the Porter and Howard reservoirs, and the few roads crossing this area are little used. The area is also posted to prohibit hunting and fishing, and under ordinary conditions there appears to be little danger of serious contamination of the supply.

Respectfully submitted,

JAMES A. NEWLANDS, *Chemist.*

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REPORTS OF THE COUNTY HEALTH OFFICERS

To the Honorable State Board of Health of the State of Conn.:

GENTLEMEN:

I herewith submit a partial abstract of the work in the office of the County Health Officer of Hartford County for the period of two years from September 30th, 1912, to October 1st, 1914.

Except in the cities there have been no changes among Town Health Officers in the twenty-nine towns in this county. The Town Health Officers of this county, many of whom have been in office for a long period, are a solid and efficient body of men, and command the respect and esteem of their fellow co-workers and of the citizens in their respective towns. Many of them, by their persistent and untiring efforts, have brought about improvements in their towns, such as water, sewer and drainage systems, which will be lasting monuments to their efforts along sanitary lines.

All laws and regulations pertaining to this department have been reasonably enforced, especially the law relating to nuisances, contagious and infectious diseases, the Medical Practice Act, the act relating to the licensing of barbers and their practice, the act relating to the sale of narcotics and the distribution of drugs and poisons, the law relating to vital statistics and the duties of registrars, the law relating to ice ponds and public water supplies, the law relating to the transportation of stable manure and fertilizers, the conditions surrounding public milk supplies, the law relating to the establishment and maintenance of slaughter houses, the law relating to the use of towels and drinking cups in certain public places, the tenement house law, and the law pertaining to other matters governed by general regulations.

The law relating to the transportation of stable manure is so far as practicable, governed by a general regulation. But in practical experience a general regulation as to the time when such manure may be transported will not apply with the same degree of fairness to a thickly settled community and a sparsely settled hamlet, nor to the continuous trans-

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portation of large quantities of manure and the occasional transportation of small quantities. In some of the large tobacco growing districts the manure is run onto the plantation by tracks extended for such a purpose. Such facilities have proven to be an economic advantage to the consumer, and a relief to residents about stations where the manure was formerly unloaded from the cars.

The law relating to the sale of narcotics, as it now exists, has been in force only since June 6th, 1913. Considering the perhaps necessary complex features pertaining to it, it is working with reasonable uniformity. It seems to be the consensus opinion of physician and druggist that it is a necessary law, but may be improved by amendments. In this county but few prosecutions have been brought under the law.

The Medical Practice Act is, I think, violated less than formerly, owing to the fact that more and more midwives are passing the required examination and are being licensed, and are a good check to their sisters, who attempt to interfere with the legitimate practice of the licensed midwife by encroachment; and also owing to the fact that physicians are keeping a lookout for the illegal practitioners of medicine.

The law relating to vital statistics is being well observed throughout the county, and the records of births, marriages and deaths are becoming really valuable. The physicians and registrars in most cases are beginning to fully appreciate as well as your County Health Officer, the importance of complete records of births, marriages and deaths. In many towns where formerly hardly ten per cent. of the records were complete, now the records are made with hardly an omission or error.

All sources from which public drinking water is supplied, as well as all sources from which ice is taken for domestic purposes, and all schools and other public buildings are periodically examined by the Town Health Officer in the respective towns in this county.

A great many cases are reported to this office for final determination and prosecution if necessary. A month rarely passes without several such cases being turned over to this office, and in one month during the period of this report twenty-six such cases came to this office. However, when the cases are turned over to this office for prosecution as a last resort, most of the parties after an interview comply with the law without a prosecution.

During the time covered by this report this office was engaged with the duties thereof on five hundred and sixty-five days, and of this time its incumbent was out of town in this

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discharge of his duties on two hundred and forty-three days. The number of office consultations recorded are eight hundred and sixty-seven, the number of individual letters recorded are one thousand three hundred and eighty-three, besides many circular letters. Many consultations and letters escaped the record.

The periodical meetings of Town and County Health Officers, together with some members of the State Board of Health, where advice can be obtained about different problems constantly arising, the work in different towns compared, and a great variety of topics, pertaining to the work of a health office, discussed, have been held during the past two years.

Most respectfully submitted by

DANIEL A. MARKHAM,

County Health Officer of Hartford County.

To the Honorable State Board of Health:

I observe in reading the reports of the Health Officers of the various Counties that it has become the custom to submit reports once in two years.

As such reports are due this month of October, 1914, and in order to preserve uniformity of action, I feel called upon to make a report for the short period of time during which I have administered the duties of Health Officer for New Haven County.

His Excellency, Governor Simeon E. Baldwin, upon the nomination of your Honorable Board, appointed me Health Officer for New Haven County on April 17th, 1914, to fill the unexpired portion of the term of Carleton E. Hoadley, resigned, until the first day of July, 1914.

On a subsequent date the Judges of the Superior Court, at Hartford, appointed me Health Officer for New Haven County for the term of four years from the first day of July, 1914.

I therefore respectfully submit the following report covering the period beginning April 17th, 1914, and ending September 30th, 1914.

During the period mentioned I was called upon to investigate twenty-three nuisances, all of which have been abated or will be abated at an early date.

In addition sixty-one complaints of nuisances throughout the County have been abated without the assistance of the County Health Officer, by a notice served by the local Health Officer.

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During my short term of office one hundred and seventy-six fumigations have been administered by the local Health Officers and a similar number of quarantines have proven effective.

Two of the Towns in the County have suffered a mild epidemic of diphtheria and in one other Town a mild epidemic of scarlet fever has been checked by extreme vigilance and two timely and effective prosecutions for breaches of the rules and regulations relating to quarantines. One of the defendants was fined twenty-five dollars and costs, and the other was fined fifteen dollars and costs. In addition to the prosecutions stated, two other persons were vigorously prosecuted; one for violating the quarantine laws, and the other, a prosperous merchant, was prosecuted for maintaining a nuisance on property owned by him. In all the proseccutions the defendants were severely reprimanded by the Courts which listened to the several complaints.

The public schools in the County are all in good sanitary condition. In most instances the school authorities are always pleased to assist in the work and are ever willing to co-operate with the local health officers in making the schools habitable and wholesome places for the children.

The question of emptying refuse and sewage in the streams is a burning question in some of our towns and is one which the Health Officers are often confronted with. It seems advisable that the next Legislature take some steps to alleviate this situation upon the suggestion to be submitted to it by your Honorable Board. Many of the streams and most of the rivers are nothing but open sewers and breeding places for disease germs and the odors arising therefrom are extremely disagreeable and in many cases harmful.

It would appear that if the State Authorities could work in conjunction with the local authorities with relation to the cleansing of the rivers and streams and the necessarily large expense involved thereby, that eventually the task would not appear so stupendous.

I approved a goodly number of applications for water analysis and I believe that all persons dealing in spring water for table consumption are now operating under a license.

Many consultations were held and many matters of business were disposed of by correspondence.

Respectfully submitted,

CHARLES W. EVARTS,

County Health Officer for New Haven County.

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NEW LONDON COUNTY.

To the Honorable State Board of Health:

I herewith respectfully submit a report of my doings as County Health Officer of New London County, covering the period of two years ending September 30th, 1914.

During this period unsanitary conditions which seemed to baffle the local Health Officers in their attempts to have the same abated were reported to me from ten different towns in the County, and ran all the way from a filthy outhouse to a brook, which by reason of the discharge into it of many sewers and a condition of low water had become a veritable cesspool. The latter instance occurred in the village of Baltic in the town of Sprague, through the center of which village Beaver Brook takes its course; and by reason of sewers and sink-drains in large numbers being discharged into this brook, a nuisance decidedly detrimental to public health was in existence and constantly growing worse. I had the local Health Officer serve written orders on all owners of drains and sewers discharging into said brook to remove the same within a certain length of time; these orders were not obeyed, and I, therefore, in June, 1913, brought a complaint to the Superior Court, asking for an injunction to restrain all parties upon whom orders had been served from further sewering or allowing drains to discharge from their respective premises into Beaver Brook under a heavy penalty. This action on my part brought results; the offending parties came together, organized a Fire District, and installed a system of sewers which connect with the sewer previously laid by the Baltic Mills Co. to accommodate its tenement houses, and nearly the whole village of Baltic is now sewered and a great improvement made in the general sanitary condition in that village. In the other cases referred to an abatement of the nuisance in question was secured without the aid of the Courts, although in some instances a number of visits on my part were necessary and threats to invoke the aid of the law had to be made.

The Groton side of the village of Mystic constantly presents problems in the way of unsanitary conditions; some have been solved during the period covered by this report by the aid of the "Tenement House" law and in other ways, and the remainder are in process of solution.

In the majority of cases the local Health Officer by the use of firmness and tact succeeds in having unsanitary conditions abated, but there are usually a few people in every town who are not willing to co-operate with the Health Officer in the abatement of nuisances; such people are growing fewer, I be-

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lieve, through a better general understanding of our health system and thereby a greater appreciation of the efforts of those laboring under it.

Two complaints of violation of the Medical Practice Act were made to me. An investigation of one of these complaints disclosed the fact that no violation of the law had taken place; as a result of the other complaint I prosecuted one Frank Pilewski before the Town Court of Griswold, on August 5, 1914. This man had been peddling medicines among the Polish people of Jewett City, and after I had brought prosecution I found that these people were exceedingly desirous of protecting their fellow-countryman and sufficient evidence to convict was not obtainable. The guilty conscience of the offender came to my rescue, however, and he made the proposition that if I would nolle the case he would pay the costs and immediately leave the State. This course was taken and Pilewski took the next train out of town for New York.

Several complaints were made to me of the violation of the law relating to the practice of midwifery. Each was carefully investigated and in one case I was enabled to obtain sufficient evidence to convict. This was the case of Mary Milewska, whom I prosecuted before the Police Court of Norwich on September 19th of this year and secured a conviction. The Judge imposed a fine of $50 and costs, which the accused was unable to pay and she was committed to jail. The result of this conviction has been to greatly deter those who have been in the habit of violating this law, the great majority of whom are foreign speaking women.

On June 20, 1914, the body of one Julius Rogovine was removed from the town of Montville and shipped to New York without a proper removal permit having been obtained. This hardly seems possible, but the facts are as follows: Rogovine, a young lad, together with his parents, was visiting in Montville, and while there was accidentally shot and killed. The Medical Examiner issued a death certificate and instructed the parents to take the same to the Town Clerk and obtain a removal permit as they desired to take the body to New York. The parents were ignorant people and evidently did not fully understand the Medical Examiner, for they obtained a box, placed the body therein, and nailed the death certificate to the box; they then carried the box containing the body to New London and shipped the same to New York on the steamer City of Lewell. The shipping clerk supposed that the death certificate nailed on the box was sufficient, and the error was not discovered until the body reached the New York authorities who immediately communicated with the

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Registrar of Vital Statistics in the town of Montville, asking him for a proper permit. The matter was reported to the Secretary of your Honorable Board, who reported the same to me for investigation, and the facts were found to be as above stated. The parents of young Rogovine remained in New York and beyond our reach. I was satisfied, however, that there was no intention on the part of any one to violate the law. It was a case of dense ignorance on the part of those who had to do with the removing and shipping of the body. It was impossible to obtain the original death certificate and a duplicate was filed with the Registrar by the Medical Examiner.

Smallpox was discovered in the town of Montville early in October, 1913, and considerable of an epidemic resulted. Stringent methods were adopted to stop the spread of the disease, with good results. The disease afterwards appeared in Norwich, Sprague and Preston, but was controlled and checked by strict quarantine and general vaccination. Your honorable Board is already familiar with the history of these smallpox cases and with the other contagious diseases occurring in the County, the same having been duly reported to your Secretary, and he personally visited the County during the smallpox epidemic and gave valuable and much appreciated aid and advice to the local Health Officers.

Two complaints were made to me of the violation of the law relative to the bottling and sale of drinking water. These complaints were investigated and I found that there was no intentional violation of the law in either case and that in one case there was grave doubt of there being any violation of law at all. Both parties, however ,immediately took steps to obtain the proper license under Chapter 126 of the Public Acts of 1913, with which law they were not previously familiar.

I approved a large number of applications for the analysis of water and refused to approve some where I felt that the State Laboratory was being "worked."

The continued analysis of milk samples has shown an improvement in the quality of the milk supply, and all health officials greatly appreciate the Laboratory's work along this line.

Early in August, 1913, considerable time was spent in distributing blanks to the local Health Officers for use and distribution to doctors, veterinarians, dentists and pharmacists under the Narcotic Drug Act passed by the last General Assembly, and in explaining the provisions of said act to interested parties. The enforcement of this act has required an

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examination of the pharmacists' records and the registration of poisons by pharmacists has been investigated.

Examination of the records of vital statistics in the different towns was made; and each instance of a delayed birth or marriage certificate reported to me by the Secretary of your Honorable Board was investigated, the reason for the delay ascertained, and such a reprimand administered as I deemed necessary to meet the exigencies of each particular case. In my judgment none of the cases were of a sufficiently aggravated nature to warrant the prosecution of the offender.

Immediately after the adjournment of the last General Assembly the attention of the local Health Officers was called to the changes in and additions to the health laws made by that body during its session, and the County Health Officers held several meetings with a view to having these laws uniformly construed and enforced all over the State.

Any changes made in the appointment of local Health Officers have already been reported, and the routine work of the office does not need to be gone into in this report.

Respectfully submitted,

ARTHUR M. BROWN,

County Health Officer for New London County.

FAIRFIELD COUNTY.

To the Honorable State Board of Health:

In accordance with the provisions of the General Statutes creating the office of County Health Officer, I herewith submit the report of my duties for the two years ending September 1, 1914.

I am gratified to say that circumstances have required but one change among the Town Health Officers of this County during the period under notice. This one removes from the list of Town and Borough Health Officers, Dr. Alvin E. Barber of Bethel.

Dr. Barber was appointed by my predecessor in office when the present law went into effect, October 1, 1893, and continued to hold the office until his resignation, due to his advanced years, in 1914, thus serving his town and borough in the capacity of Health Officer for nearly twenty-one years. H. Frank Moore, M. D. was appointed to fill both vacancies. Dr. Barber's retirement leaves but four Health Officers in Fairfield County, who were among those originally appointed

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in 1893, Dr. George F. Lewis of Stratford, Dr. W. S. Watson of Danbury (Town Health Officer of New Fairfield), Dr. W. J. Tracey of Norwalk, and Dr. W. H. Donaldson of Fairfield.

Since the expiration of the period covered by this report, Dr. Donaldson has tendered his resignation to take effect January 1, 1915, which course he deems necessary by reason of the increase of sanitary work in his town and the pressure of his private practice. Dr. Donaldson has afforded one of the best examples in the County of the zealous, intelligent and self-denying public servant.

Notwithstanding my general policy to refrain from prosecutions or other litigation where the results can be beter or equally well obtained by other means, which policy I have alluded to and explained in previous reports, I have felt obliged to bring actions, either by way of prosecution or for injunction, in eighteen (18) cases and in several instances have participated in Court in the trial of cases relating to sanitary matters, but commenced by local prosecutors.

In four (4) instances I have proceeded against nuisances by the process of injunction and in several other cases of disregard of Health Officer's orders for the abatement of nuisances, I have prepared applications for injunction, notified the prospective defendant that such application was about to be made and thus brought about voluntary abatement before the case reached the Courts.

One of the cases requiring the greatest amount of time and attention, grew out of the maintenance of a garbage incinerating plant in the City of Bridgeport. The City Board of Health and the City Health Officer made an order requiring the owner of the plant (which was not a municipal plant) to suspend operations on account of its character as a nuisance prejudicial to public health and from that order an appeal was taken to me. I held numerous hearings in the course of which much expert testimony was introduced and ultimately sustained the order in all its essential features. The order was not then complied with and I applied to the Courts for an injunction restraining further violation. Certain modifications of the plant were then undertaken by the owner with the consent of the City authorities and the condition became somewhat ameliorated. The situation thus became one in which the City Board of Health did not desire that the injunction proceedings should be further pressed.

Another condition existing in the Town of Wilton called for action by way of injunction. A pond surrounded by a low, swampy area was found by the Town Health Officer upon complaint to be a mosquito breeding place under the definition of the recent law relating to the abatement of such

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sources of nuisance. The time having expired which was allowed by the Town Health Officer in his order, I commenced proceedings by an application for an injunction. The owner of the pond thereupon, in good faith, undertook certain steps, under the supervision of a competent engineer, for the elimination of what the engineer believed were the mosquito producing areas. Further action in court was deferred with the acquiescence of all parties in interest until such time as it should more conclusively appear whether or not the steps taken would have the desired result. Late in the summer of 1914 it was concluded by all parties that the question of whether or not the efforts had been successful could not be determined until another spring. The matter therefore stands in the condition above indicated awaiting the developments of the spring of 1915.

The other two applications for injunction were of a more routine nature and both resulted in abatement and therefore need no further notice here.

I brought two prosecutions for violations of city ordinances relating to public health, disposal of garbage, etc., in the City of Bridgeport, and one for maintenance of nuisance in Fairfield.

I brought one prosecution against a butcher for the violation of the law relating to the sale of "bob veal" but was obliged to enter a nolle, as an examination of the evidence showed to my satisfaction that the guilt was not attributable to the man against whom the complaint had been lodged, but rather to another party who was not within reach or process.

I prosecuted two undertakers, one in Bridgeport for removing a body from an adjoining town without the necessary removal permit; and one in Darien for making an interment without a permit. Both were found guilty and paid substantial fines.

I brought one prosecution under the pharmacy law upon the complaint to me of the Pharmacy Commission. A licensed pharmacist, who also had a license to practice medicine, "farmed out" his pharmacy license. He was arrested and pleaded guilty in Court, which record of conviction enabled the Pharmacy Commissioners to revoke his license. He has since left the State.

I brought one prosecution against a physician for failure to report a case of contagious disease. The evidence presented to me before trial seemed quite conclusive as to his guilt, but when presented under oath before the Court, failed to establish such guilt. I therefore, at the conclusion of the trial asked the Court to find the defendant not guilty, which was done.

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I conducted a very vigorously contested prosecution under the law relating to the practice of dentistry, against a "registered assistant" who was practicing as a dentist upon his assistant's registration. The case was fully tried out before the City Court of Bridgeport and the defendant found guilty and fined upon three counts. He appealed but in the upper Court pleaded guilty to one count and paid a fine of $50 and costs.

The tenement house law now having application in towns as well as in cities, has called for considerable attention on my part, both by way of advice to local Health Officers, and in four instances by way of prosecution. While there is a great deal to be done to bring the tenement houses of the cities and larger towns into full compliance with the letter and spirit of this law, I have every reason to believe that its existence on our statute books and the activity of most of the Health Officers in calling attention to violations and insisting upon their abatement, has resulted very advantageously. Experience with the practical work of this law suggests some improvements which might be made in it.

The definition of a tenement house, as contained in Sec. 2 (Chapter 241, Public Acts of 1911) excludes from its operation certain buildings which are essentially within its broader intent. I refer particularly to the requirement that in order to be a tenement house within the meaning of the law, three or more families must have a common right in the halls, stairways or yards. Under this definition, it is possible for a building in all essential respects a tenement house in the common use of that term, to be maintained in violation of this law because only two families have the use of each stairway.

It is gratifying to find how large a proportion of the owners of tenement houses have taken it upon themselves, without compulsion, upon being notified of the provisions of the law, to remedy the defects in their tenement house property and thus materially improve the sanitary surroundings of their tenements.

My referencc to the proceedings in the case of a mosquito breeding nuisance, while it was the only case in which legal action seemed necessary or desirable, should not be understood to mean that this was the only case under this law brought to my attention. I have had occasion to advise Health Officers and others in a considerable number of the towns adjoining Long Island Sound, as to the true intent and meaning of the law as it stands. Much has been done by the citizens of the towns along the shore, usually by private subscription, augmented in many instances by town appropriations, in the way of draining the salt meadows. This work in

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most of the towns has been done in co-operation with the Town Health Officer and my information is that its success has been quite as great and gratifying as was anticipated.

I have been called upon from time to time, to about the usual extent, for advice and co-operation by the Health Officers throughout the County in matters of such routine character that it is not necessary to allude to them here.

A condition in the City of Stamford required some attention, and illustrates the limitations which were placed upon the powers of the County Health Officer within the City limits. Complaint reached me that the City dumping ground for garbage on the road to Shippan Point was a nuisance detrimental to the public health. It was, however, maintained at the instance of the Mayor and Common Council. An examination of the City Charter of Stamford, as it then was, showed that the Common Council itself constituted the Board of Health of the City and that any order for the abatement of a nuisance must emanate from that body, which was the very body with whose acquiescence the offensive condition was being maintained. I wrote to the Health Officer a letter in relation to the situation strongly recommending steps for its abatement, with the request to him that it be referred to the Common Council. My information is that it was so referred, but that no action was taken. Feeling that my powers in the City in respect to nuisances, were confined in this instance, to the enforcement of a legal order of the Board of Health, I deemed myself helpless to remedy the existing conditions. A change in administration has since resulted in the abatement of this dumping ground and abatement of the nuisance. A number of suits by private individuals owning property nearby and claiming damages for injury to that property from the dump, have been brought, and I believe in more than one instance, judgment has already been rendered against the City for such damage.

I was obliged to advise the sanitary committee of the Common Council of the City of Danbury that the Board of Health lacked jurisdiction to abate conditions at a certain fur cutting shop in that city. This complaint illustrates the line of distinction not always easily drawn by Health Officers between nuisances which may be abated by private action and nuisances which, being detrimental to public health, may be abated by action of the health authorities. This shop, by reason of noise and the fur particles allowed at times to escape into the atmosphere, was, I understand, subsequently held in a private action brought by neighbors to be a nuisance, but I am quite convinced that it would not have been held in an action by the health authorities to have been with-

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in their jurisdiction on the ground that it was prejudicial to public health.

The new law requiring slaughter houses to be licensed by the health authorities has, I believe, advantageously regulated this class of occupation. Unfortunately, places which are used exclusively for the slaughtering of calves, are excluded from the operation of this law, which applies only to places "where the business of slaughtering beef, poultry or swine is carried on." If the Act (Chapter 214, Public Acts of 1911) might be sufficiently broadened to cover places where veal is slaughtered, it would still further diminish the possibility of nuisances from butchering operations.

The sewage disposal at the Tuberculosis Sanatorium at Shelton required my attention on one or two occasions. The system of sewage disposal there presented problems very difficult of solution without contamination of a stream which, at some distance below, was used to some extent for domestic purposes. The members of the Tuberculosis Commission, the local Health Officer and myself, met on the premises in conference, went over the situation and a plan was devised, which I understand, has been carried out and resulted satisfactorily. The Superintendent and Commissioners were at all times in fullest accord with the health authorities in the effort to overcome the difficulties of the situation.

Respectfully submitted,

GEORGE E. HILL,

County Health Officer for Fairfield Co.

WINDHAM COUNTY.

To the Honorable State Board of Health:

I herewith respectfully present a condensed report of the principal features of health work in Windham County during the two years last past.

The most important event has again been an epidemic of smallpox, this time in Killingly, Plainfield and Brooklyn in the autumn of 1913. The first case positively diagnosed as smallpox was discovered in Plainfield on September 8, but the history of this patient and other subsequent developments indicated that the disease had existed in Killingly prior to that date, either in very mild form and undiscovered, or mistaken for chickenpox, which was also somewhat prevalent in the town at the time, and which, even later, caused some dif-

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ficulty in distinguishing between the two diseases, particularly in the early stages. The tracing of the origin of the first Plainfield case led to the identification of the disease in Killingly but by that time the epidemic was well spread in the borough of Danielson and outlying portions of the town, also in the adjoining eastern portion of the town of Brooklyn. Prompt discovery and quarantine of the first Plainfield case prevented any spread of the disease from that source, except to one person in the immediate family of the patient, but other independent cases, also said to have been contracted in Killingly, appeared and, in spite of all precautions taken to prevent it, contagion spread until there had been a total of twenty-one known cases (one fatal). Sixteen of these cases occurred in or near Wauregan village, and it is safe to say that there would have been many more but for the commendable action of the owners of the Wauregan mills. This company, at its own expense, furnished free vaccination to all employees in its mills, provided a trained nurse to care for and dress, when necessary, the vaccinated arms, secured and paid for several house-to-house canvasses of the village for concealed or unidentified cases, and in all ways co-operated with the health authorities. Such public spirited and generous action is not only so helpful but so rare as to deserve special mention and commendation. In the canvass above mentioned one deliberate case of concealment of a case was discovered, and was promptly prosecuted by me and the offender fined, with the result that all later suspicious cases were reported to the Health Officer.

During September, 1913, there occurred in Killingly a considerable number of cases of what the physicians attending the few cases to which a physician was called, diagnosed as chickenpox, but when the first Plainfield cases were traced to Killingly I advised the Borough Health Officer of Danielson to call in an expert to examine the so-called chickenpox cases. Examination by Dr. Keating of Willimantic, who had much previous experience in smallpox epidemics, disclosed that of twenty-eight cases, in twenty families, all but two were smallpox. Upon the discovery of this condition Warden Bullard and the other borough officers inaugurated vigorous measures to check the disease, by quarantine enforced by police guards, general vaccination, and a systematic canvass for unreported cases. Most of the cases were mild, no fatalities resulted, and the progress of the epidemic was checked within a reasonable time. The lesson from this experience is plain—that, especially when smallpox exists in the vicinity, care should be taken in the diagnosis of cases which may by any possibility be cases of this disease and, as

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many physicians seem unable to distinguish between mild cases of chickenpox and mild smallpox, expert advice should be secured in doubtful cases.

Before the identification of the disease in Danielson it had spread into the manufacturing village of East Brooklyn adjoining and in West Wauregan. Here the Town Health Officer, with the co-operation of the selectmen and mill owners, conducted a prompt and effective campaign by house-to-house canvass for unidentified cases, quarantine, and thorough fumigation, and general vaccination.

The local Health Officers in all these towns deserve credit for the vigorous and courageous manner in which they performed their duties, and the town and borough authorities, as well, for their co-operation and generous financial provision for quarantine, vaccination, and care of the sick and their families.

The total number of cases reported in Killingly, including the borough of Danielson was fifty-eight, and in Brooklyn, twenty-seven.

The law concerning the issuance of permits to conduct slaughter houses has resulted in a marked improvement in these places, the local Health Officers being instructed to inspect each slaughter house and issue permits only to those found or placed in sanitary condition.

Cases which have come to my attention indicate that the fact that the local health officer has power to effectively regulate the transportation of garbage from one town to another or from a city to another part of the same town, is not generally understood. If persons who are annoyed by nuisances arising from the transportation or disposal of garbage will enter complaint with the Health Officer, unsanitary conditions can be easily corrected.

The Health Officers of the larger towns especially have taken many samples of milk for analysis at the State Laboratory, the results in most instances being fairly satisfactory, but when the analysis of any sample, as shown by the duplicate report sent me, indicate unsanitary conditions either in production or handling, I have instructed an inspection of the premises by the local Health Officer which has usually produced an improvement.

As a result of progress in the connection of private premises in Putnam, with the sewer system recently installed, nuisances and disease have materially diminished, but a systematic collection of garbage is needed in that community.

A novel situation arose in June last affecting the water supply of the borough of Danielson when, from some unknown cause, a great number of fish in the borough reservoir

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died and were found floating on the water or stranded on the shores of the reservoir. This condition caused much apprehension on the part of the users of the water but upon my request the water company removed the dead fish as thoroughly as practicable and an analysis of the water disclosed no dangerous developments.

During the summer of 1913 complaints were made to me that the discharge of sewage from the village of Plainfield into a stream was endangering the health of the residents of Packerville, located further down the stream, but a careful investigation disclosed no cases of illness traceable to this cause, so no evidence on which to base legal proceedings by the health authorities was found available.

In October, 1913, complaint was filed with me by seventeen residents of Willimantic that the water supply of the city was liable to be polluted by the cutting and harvesting of ice on the reservoir from which the city is supplied with water and the maintaining of ice houses near said reservoir, in connection with the conduct by the municipality of the business of cutting and storing ice, on a large scale, for sale to the inhabitants of the city. This complaint evidently contemplated action by the County Health Officer under the provisions of Section 2,599 of the General Statutes, as amended by Chapter 192 of the Public Acts of 1909, which provides, in part, that:—"Whenever any land or building is so used, occupied, or suffered to remain that it is a source of pollution to the water stored in a reservoir used for supplying residents of a city, town, or borough with water or ice, or to any source of supply to such reservoir, or when such water or ice is liable to pollution in consequence of the use of the same, either the authorities of such town, city, or borough, or the county or town Health Officer, or the persons, firm or corporation having charge of such reservoir, or the right to procure ice therefrom, may apply for relief to the Superior Court in the County where such reservoir of water is located, and said Court may make any order in the premises, temporary or permanent, which, in its judgment may be necessary to preserve the purity of such water or ice."

In order to obtain relief under this statute it would be necessary to prove that the contemplated use of the land near the reservoir and the ice houses erected thereon, or the cutting and harvesting of ice on said reservoir, or both, would be a source of pollution to the water or ice, or liable to pollute the same. Upon this question of pollution or liability to pollution, I requested the advice of your Board and upon the advice received from you (which, I assume, will be covered by the report of the Board) and the other results of my inves-

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tigation of the question, including the fact that the cutting and storage of ice, though on a comparatively small scale, the preceding winter produced no unfavorable results as shown by analysis of the water, I decided that sufficient evidence was not available, at the time, to warrant the application contemplated by the complaint. I did, however, formally advise the city authorities of the complaint and consequent investigation and the conclusion arrived at, and that unless strict precautions were taken in harvesting, storing and loading the ice future results might justify action. These precautions were, in the main, well observed and no unfavorable effect upon the water resulting from the municipal cutting and handling of ice has yet appeared from the frequent analysis of the water, or otherwise. The necessity of continued strict precautions in the future must, however, be borne in mind.

The satisfactory condition as to promptness by physicians and others in returning certificates pertaining to vital statistics and reporting of contagious and infectious diseases has, with very few exceptions, continued, and no prosecutions for failure to return have been found necessary.

One complaint against an unlicensed dentist, on investigation developed the unusual condition that the owner of the establishment, and in whose name it was advertised, while unlicensed, lived outside the state and beyond the reach of process, while the resident manager and operator was duly licensed but his name did not appear in the advertisements.

All the Town Health Officers, whose terms expired in October, 1913 and 1914, were reappointed, but Dr. L. A. Morasse was appointed by the city authorities, City Health Officer of Putnam, succeeding Dr. Omer LaRue, who, however, continues as Town Health Officer.

In conclusion I desire to thank the State Board of Health, and especially Secretary Townsend, for their prompt and helpful co-operation and assistance.

Respectfully submitted,

GEORGE E. HINMAN,

County Health Officer for Windham County.

LITCHFIELD COUNTY.

To the Honorable State Board of Health:

GENTLEMEN:

I herewith submit my report to September 30, 1914. On succeeding to the office of County Health Officer I found the af-

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fairs of the office in excellent condition and that the Town Health Officers were capable and experienced men. I have reappointed all of them whose terms expired in October excepting Dr. Joseph Robinson of Cornwall, who removed to New Britain. Dr. R. Grand-Leinard was appointed Health Officer of Cornwall to fill the vacancy and for the term of four years from October, 1914.

My first efforts were to get in touch with the local Health Officers and with the other County Health Officers and Health Associations. As a means of getting better acquainted with the Health Officers of this County and enabling them to meet each other, I called them together at Canaan on June 15th. The result of the meeting was the organization of the Litchfield County Public Health Association. Articles of association were adopted which, among other things, provide for semi-annual meetings at Canaan on the third Thursday of May and the first Thursday of September. There was a good attendance at both meetings. The first meeting was addressed by Mr. Stadtmuller, Food and Dairy Commissioner, and the second one by Dr. Joseph H. Townsend and Judge Daniel Markham. I think these meetings will increase the efficiency of the health service in this County.

The health of the County appears to have been normal except in the Borough of Torrington, where there were an unusual number of cases of scarlet fever in June. The Borough Health Officer, at that time, was, and had been for a number of weeks, too sick to perform his duties in person, and the spread of the disease may have been, in a measure, due to lax quarantine. Dr. H. B. Chapin, who had been acting for Dr. Streit, was appointed Acting Town and Borough Health Officer. He instituted a strict quarantine and was furnished by the Borough, with an hourly police patrol from early morning to late in the evening, to make the quarantine as complete as possible. Your Secretary, Dr. Townsend, came to Torrington, and on his advice the public schools were closed to the ninth grade, Sunday schools discontinued, and children under a certain age excluded from places of amusement. As a result of these precautions the spread of the disease was stopped. The necessity of obeying quarantine regulations was impressed on the public mind by the prosecution and conviction of twelve persons who entered a house where there had been a death from scarlet fever to attend the funeral. Substantial fines were imposed and only four more prosecutions were required to convince all elements of our population that the health authorities meant business.

Privies and cesspools are the prevalent nuisances and the most difficult to abate and keep abated. The village of Lake-

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ville is afflicted with the cesspool nuisance and with apprehension of the contamination of Lake Wononskopomuc, a source of its water and ice supply, by sewage from the Knight School, by reason of inadequate sewer beds. It can only rid itself permanently of the menaces to public health by a sewerage system. The Knight School is a State institution. Insuperable difficulties would probably be met with in trying to compel the State to stop violating its own sanitary regulations. If this school has no funds or power to properly dispose of its sewage the Legislature should give it both.

Watertown has no means of sewage disposal except cesspools, privies and private drains into a stream running through the village. The agitation for a public sewer system, started and kept up by the Town Health Officer, has resulted in an act of the Legislature authorizing a sewer system but for financial reasons no action has been taken. The water supply of the Borough of Winsted was in danger of contamination from a cesspool on a farm owned by Prof. M. I. Pupin of Norfolk and New York. A stream of water ran through the cesspool and by means of a tile continued directly into a brook which was a reserve water supply for the borough.

The owner of the premises neglected to abate the nuisance after his attention had been called to it by the Health Officers of Winchester, Norfolk and the County Health Officer. As a last resort an injunction was obtained and the use of the cesspool discontinued.

From the reports of the U. S. Public Health Service it is apparent that many localities are adopting more stringent regulations as to the construction and care of cesspools, privies and stables and that Connecticut, outside of the cities, has not gone as far as it may be possibly necessary in respect to those nuisances. The Borough of Torrington will ask the next Legislature for more specific and extensive powers to regulate these matters and to abolish all outside closets on premises connected with the sewer. Also for power to collect and dispose of garbage and to appoint sanitary inspectors to report to the Health Officer all nuisances and violations of sanitary regulations. The vital statistics of a number of towns have been inspected and the laws relative thereto found to be fairly well complied with. Most of the cases of non-compliance were of a minor nature and all of the registrars manifested a willingness and desire to have their records as complete as possible. The law about marriages, when one of the parties is a non-resident had been violated in some instances, but as these violations occurred soon after the laws became effective and were due to ignorance rather

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than wilfulness, nothing more was done than to call the attention of the delinquent parties to the law and its penalty. The worst defect in the records is the absence in numerous cases of the name of the child in the birth certificates. The physicians, who are habitually remiss in this respect, have had their attention called to it and asked to make an effort in all cases to give the full name. It might be practicable to pass a law requiring the registrars within a limited time to procure the name of the child and make the fee large enough to induce them to do so. In most cases a personal call on the parents is necessary to obtain the name and the present fee of ten cents does not pay for the trouble. If this is a matter of prime importance some way should be devised to cure the defect.

The ready response of the Secretary of the State Board of Health to all requests for advice and assistance are greatly appreciated by the Health Officers and helps to solve many perplexing questions relating to health and sanitation.

Respectfully submitted,

WILLIAM W. BIERCE,

County Health Officer, Litchfield County

MIDDLESEX COUNTY.

To the Honorable State Board of Health:

Pursuant to the requirements of the statute I herewith present to you a report of my doings for the biennial period ending September 30, 1914. In the execution of this office the general duties are of such routine character and are now so well understood that very little occurs to merit special report.

The Health Officers of the several towns have discharged their duties with discretion, fidelity and care and the health of their communities has been generally normal.

During the period there has been a considerable number of cases of smallpox in Middletown, a part of which were within the city and a part outside the city. Because the Town Health Officer had no jurisdiction within the city, and there was a City Health Officer for that jurisdiction, a division of responsibility and some confusion ensued, the effect of which was not altogether advantageous. Equal effort was put forth to prevent the spread of the disease but both municipalities were subjected to considerable expense. At the same time there were a few cases in the adjoining towns.

The disposal of sewage on the western slope of the city of

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Middletown has for a long time presented a serious problem for the consideration of the municipal authorities, who have been reluctant to undertake its solution because of the great expense involved in the construction of a long trunk sewer. In connection with the City Health Officer the matter was taken up, the services of an expert sanitary engineer secured, and a complete system of sewers laid out with a septic tank for the treatment of sewage. The necessary municipal action was had and the system is now approaching completion. This will afford to the property in the western and northern portions of the city ample facility for the disposal of its sewage and will be a great aid in abating many nuisances in that territory.

When the law regarding narcotic drugs went into effect (and it in fact became operative before any preparation could be made for its intelligent operation), we prepared an analysis and synopsis of the law for the guidance of all who were likely to be affected by it, and these were distributed to the physicians, pharmacists, dentists and veterinarians. The order blanks provided by the Pharmacy Commission were also distributed. So far as the observance of the law is concerned there appears to be a full compliance with its provisions. While this law goes a long way to accomplish the desired result, there is still some question whether it covers the situation fully.

In the matter of vital statistics, aid has been given to those registrars in whose offices a sufficient number of certificates have accumulated to call for binding. Index sheets have been provided and the indexing and binding have been supervised to the end that these important records should be put into good, secure and complete shape for preservation and future reference.

Respectfully submitted,

W. U. PEARNE,

County Health Officer for Middlesex County

TOLLAND COUNTY.

To the Honorable State Board of Health:

GENTLEMEN:

I herewith submit my report as County Health Officer for the County of Tolland. The report will necessarily be brief as it dates only from April 14th, 1914, upon which date my appointment was made.

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I am pleased to report that the health of the county during the above period has generally been good.

During the summer I ordered the various town, city and borough Health Officers to make an inspection of the school buildings and outhouses connected therewith, and also the toilets in the railroad stations within their jurisdictions. The inspections have been made and suggestions offered as to how conditions could be improved, with the result that to-day they are all in good sanitary condition.

Early in June I brought a prosecution against a man in the town of Tolland for selling the flesh of a diseased cow after the cow had died, and he was fined $25 and costs. This is a matter which should be given more attention especially among the foreign population in our rural communities. The health of the community is sometimes impaired by such practices and in the case mentioned it seems almost providential that many people were not poisoned. The man who owned the dead cow dressed it off and sold the carcass, and the purchaser in turn sold it to a meat dealer in Hartford. After making the purchase the Hartford dealer noticed the discoloration of the meat and was obliged to dispose of it to a soap factory as he was afraid to have any of it go into the hands of those who might eat it.

An examination of the cow's stomach indicated that it had picked up some poison in the pasture.

A number of permits have been issued for the analysis of drinking water suspected to contain impurities.

The poison registers in the drug stores which have been examined have been found in good shape and show that the law is being complied with.

The records of vital statistics are usually in compliance with the law and in such towns as they have not been the registrars have been advised as to their duties, and all seem anxious to do what is right as soon as they are correctly informed as to what they should do.

Town, borough and city Health Officers have been advised to follow up the milk analysis in order that the milk dealers may be held to an obedience to the law in the matter of the sale of milk.

There is a good working spirit among the Health Officers of the Towns and the County with the result that all are working in harmony for the best interest of the health of the county.

Dated at Stafford, Conn., this 27th day of October, 1914.

M. D. O'CONNELL,

County Health Officer for Tolland County

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THE REPORTS OF THE LOCAL HEALTH OFFICERS

The town, borough and city Health Officers of the State have nearly all made the annual report of their doings to the State Board of Health, as required by law. These reports give a clear and concise account of the sanitary condition and health of the various towns, and it is regretted that the limit placed upon the size of this report by the Board of Control prevents their publication. Most of the reports received from the cities and larger towns show an increased activity and interest in matters pertaining to sanitation and the public health, both by the health officials and the public in general. The City of New Britain has within the past year reorganized its health department on a metropolitan basis, with a full time Health Officer. The towns of Greenwich and Manchester have also greatly improved their health service, as the increasing population and public welfare demanded.

The following are published as showing the general character of these reports, or for the reason that they relate to matters of particular interest.

REPORT OF THE HEALTH OFFICER OF BERLIN FOR 1913.
DR. GEORGE P. DUNHAM.

To the Connecticut State Board of Health:

The report of the Town Health Officer for the year 1912-13 is very similar to that of other years. There have been no epidemics of disease of any sort. The general health of the town has been excellent. There has been a very exceptional freedom of sickness among children, especially of summer intestinal troubles.

During the year there were only twenty-four cases of contagious diseases reported, a remarkable showing considering the size and character of the town. There were eleven cases of measles of a mild type, all occurring in the Blue Hills school. Six cases of diphtheria with one death; typhoid and scarlet fever, one each. There were numerous cases of whooping cough in town. It is almost impossible to have the parents report such cases. However, children with whooping cough are excluded from school, though the case has not been reported to the Health Officer.

The collection and examination of milk sold in town has been continued by the State Laboratory with very satisfactory results. The repeated examination of samples taken at irregular intervals does much to keep up

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the quality. All specimens have been found to come up to the high standard required by the state.

Nuisances have been abated as far as possible but with the lack of facilities for constant inspection this cannot be done with the best results unless the citizens notify the Health Officer of any such nuisances. It is impossible to cover the entire field and such should be reported promptly.

During the school vacation all the school rooms have been cleaned, fumigated with formaldehyde gas so that the sanitary conditions are very satisfactory. All out-houses have been inspected and found to be in proper condition. The Worthington and Selden school buildings are to be provided with fire escapes to conform with the law recently passed. As the reassembling of school children is likely to be followed by an outbreak of contagious diseases, close watch is kept over the children, and if two or three children become infected, the school is closed, the room fumigated, the books destroyed, and the children kept under strict observation.

Several changes in the laws concerning the Public Health have been made during the last session of the General Assembly. A few of the most important are cited.

"No horse, cow, calf, swine, poultry, sheep, or goat shall be kept in or near any tenement, lodging or boarding house unless stabled at least twenty feet distant from such tenement, lodging, or boarding house, and then only when such stabling is not detrimental to health, in the opinion of the Board of Health."

After October first there will be a change in the present method of furnishing diphtheria and tetanus antitoxins. These will be purchased outright from the Lederle Laboratories and distributed directly to the Health Officers. Each Health Officer will be supplied with an initial supply which he will replenish by requisitions on the state board as his stock becomes reduced. Accompanying these requisitions must be the physician's orders for what has been used.

"Every person, firm or corporation who shall sell or offer for sale any eggs which have been preserved by any artificial process, or which have been kept in storage for more than fifteen days, shall affix to package or receptacle containing such eggs, a label or placard bearing in plain letters the words 'cold storage eggs,' 'preserved eggs,' as the case may be."

The attention of the citizens of Berlin is called to a dangerous and threatening condition in the Beckley quarter where the New Britain sewer beds are located. These sewer beds will become a source of future trouble for the town of Berlin unless some immediate remedial action is taken at once. Not only are they becoming a menace to the health of the community in which they are located, but a marked depreciation of property will certainly result. At "high tide" the banks of these sewer beds are overflowed and the sewage, unfiltered, runs over onto the adjacent land and during the process of drying a horrible stench arises. An unfiltered overflow flows directly into the Mattebessett river, polluting the stream. The banks of the river are covered with filth and slime. The stream is in such filthy condition from sewage pollution that the cows will not drink out of the river and consequently the farmers are experiencing great difficulty in securing a suitable water supply for their cattle.

There is another very serious phase connected with this river and which is a menace to health. The brickyards located along the river are dependent upon this stream for their water supply. In one yard alone nearly thirty workmen come in daily contact with this contaminated water, thus endangering the health. Your Health Officer has seen and inspected this dangerous phase of the situation.

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REPORT OF THE HEALTH OFFICER OF NEW HAVEN FOR 1913.
DR. F. W. WRIGHT.

To the State Board of Health:

I have the honor to offer the following report for the city of New Haven for the year ending August 31, 1913.

With the Department of Health of the city of New Haven, the past year has been one of unusual activity. This activity has been due, not to any special prevalence of contagious diseases or increased number of nuisances, but to additional duties that are being continually placed upon the department. These increased duties yearly require a larger number of men, yet the corps is always too small to keep the work as well in hand as we wish, but it is with satisfaction that we note the tendency to make appropriations that will enable the work to be done more promptly and more thoroughly than has been the custom in past years.

It seems as if the public appreciates to a greater degree than ever before the efforts of the department and realizes that efficient work requires more men and money than we have ever had. There was no great prevalence of contagious diseases during the year, nor were there any local outbreaks worth mention. In one school there appeared, within a few days, three cases of diphtheria, that caused considerable excitement in the immediate vicinity of the school. Not so much from any possible danger or spread of the disease as by reason of an organized attempt to discredit the disinfection of the school rooms, as done by the Board of Health, because it was not done according to the ideas of certain individuals.

It gives me pleasure to report that we have had less typhoid fever in New Haven the past season than for many years. If there is no increase in the ratio during the remainder of the calendar year, we will certainly establish a record for the city.

On February 1st, 1913, an inspector was detailed to devote his whole time to the inspection of tenements and lodging houses. This he has done with a commendable energy, and the results have been most gratifying. It was scarcely to be expected that one man could accomplish what he has been able to do. There still remains much to be done, as we have as yet been able to do away with only the graver defects in the sanitation and construction of these buildings. But with the start already made and a continued vigorous campaign against tenement house abuses, this city can soon be with the foremost, in the condition of these buildings.

At the same date we did away with our old system of Medical Inspection of schools. Instead of five physicians giving but a small portion of their time to the search for communicable diseases, two were put to work for the full school hours. These devote their time almost exclusively to making physical examinations, and the nurses have taken the emergency cases, only calling upon the doctors when the conditions were such that they could not properly administer to the requirements.

During the summer the nurses were for the most part employed in making house to house visits, instructing people as to some of the primary essentials in good housekeeping, protecting foods and milk from contamination, and teaching mothers how to prepare food for their infants. This work, I believe, was productive of great good and should be continued.

Something over a year ago the farm inspector was provided with an automobile and he has been able to cover the milk producing places more thoroughly and more frequently than ever before, but as there are nearly eight hundred farms producing milk for the New Haven market, and the number is constantly increasing, it is impossible to have as close a supervision of these places as is desired.

During the year the Board of Health made a regulation, making whooping cough a reportable disease and forbidding those having the disease to

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go in public places, such as churches, stores, theatres, etc., and providing they may be upon the street if wearing badges stating that they have the disease.

Several amendments to our regulations concerning the contamination of foods were also passed. The law now requires that breadstuffs be covered during transit, and that all foods that are to be eaten uncooked be so covered or screened as to be impossible of contamination by flies or other insects. There has been a decided improvement in conditions since the adoption of these regulations, but there is still room for greater improvement. It is our intention to press this regulation as fast as possible and with that object in view some fifteen persons have been arraigned in the city court and fined for not observing the condition of the regulations.

The advances in sanitation and preventive medicine are so rapid, that an up-to-date Health Department is required to be continually on the alert to new conditions. These conditions develop much more rapidly than most people appreciate and to meet them the expenses of the department are continually increasing. To cover this additional expense the department has to be continually asking for greater appropriations and to obtain them the public must endorse our efforts and show an appreciation of what is being done.

REPORT OF THE HEALTH OFFICER OF MANCHESTER FOR 1914. DR. D. C. Y. MOORE.

To the State Board of Health:

The present Board of Health, appointed by the Board of Selectmen on October 7, 1913, and organized on October 8, 1913, is D. C. Y. Moore, chairman, F. A. Sweet, secretary and George M. Barber. As this was a new departure in conducting the department of health and sanitation in the town of Manchester it became necessary to formulate new rules and regulations pertaining to all departments of the Board of Health. This was no small task, as this board carries with it all the duties imposed upon the officers appointed by the County Health Officer in addition to the appointment of the Milk Inspector, who is responsible to the Board of Health and to carry out the rules and regulations pertaining to building and plumbing, which the selectmen may adopt and refer to the Board of Health for their enforcement.

ORGANIZING.

Several towns were visited, including Winsted, Torrington, Bristol and Hartford, and the Boards of Health of these places were consulted regarding the formulation of rules and regulations for the adoption in Manchester. It was not until January 1, 1914, that the milk regulations were adopted, and put in force. On January 27, 1914, the sanitary regulations were adopted. The rules for building and plumbing were drafted and given to the Board of Health for carrying out the same on June 1, 1914. These have all been printed in pamphlet form. There has also been a pamphlet issued for the treatment and care of contagious diseases and prevention of tuberculosis.

Arrangements were made early in the year with St. Francis' hospital whereby throat cultures could be made and examined in suspicious cases of diphtheria and a report received within a few hours where it required two or three days from the state laboratory of Middletown, saving permanent quarantining until a positive diagnosis of diphtheria was established.

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The house, which was built for fumigating purposes, has worked out very satisfactorily. All bedding and clothing which could not be boiled has been fumigated in this building and returned to the owners and no case of contagion or infection has appeared the second time in the same house. Forty-five of these fumigations have been done.

SMALLPOX.

The case of smallpox that had been reported before the present board took office was removed to the isolation hospital and a physician and nurse secured to take charge. The second case of smallpox was reported on January 22, 1914, and was removed to the isolation hospital and attended by the patient's own physician, also the services of a man nurse were secured, at no expense to the town.

In the opinion of the Board of Health the wholesale vaccination of school children at the appearance of smallpox is not inducive of the best results. They feel that the board of education should take some action along this line, as the only protection a community has against a smallpox epidemic is that of vaccination, and the rising generation should be protected by it. The order for general vaccination of the school children which the Board of Health issued has been very satisfactorily complied with.

A systematic school inspection has been conducted and about 1,200 children examined by the Board of Health exclusive of the examinations made by the school physician.

SCARLET FEVER.

The scarlet fever cases reported, were, for the most part, of a mild form, and, in a great many instances the disease was not noticed by the parents and the children were allowed to mingle with other children and attended school while passing through the contagious stage of the disease. For that reason the epidemic has been quite extensive, forty-three cases having been reported. Every case has been investigated and a rigid quarantine established. In all there have been 94 contagious and infectious diseases reported and 68 fumigations made.

NUISANCES.

There have been 189 complaints of nuisances, all of which have been investigated and where it has been deemed necessary recommendations for corrections have been made, followed, if necessary, by written orders for abatement of nuisances wherever they existed.

The outhouse nuisances are disappearing, but altogether too slowly, particularly in the thickly populated portions of the town. During the year there have been forty outside closets eliminated.

In an effort to exterminate the mosquitoes and flies eighteen manholes, four stagnant ponds, and the so-called "dry brook" running through South Manchester and various other breeding places have been sprayed once a week.

OTHER MATTERS.

An order was issued requiring all garbage collectors to be licensed after June 1, 1914. There have been only three licenses issued, and one slaughter house has been licensed.

When complaints have been made regarding the water supply or there has been reason to suspect contamination, samples have been sent to the state laboratory for analysis and the water has, in every case, proved satisfactory.

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There have been 171 samples of milk examined, 180 investigations of stables, and 568 cows examined. Since this regular inspection began the milk has shown a marked improvement in all respects. The fat percentage has increased and the percentage of clean milk has improved. Where we had some as low as 30 per cent. dirty in the first lot of samples we now rarely get below 75 per cent. and frequently as high as 95 per cent. clean. The dealers and dairymen, generally, have shown a feeling of good will and co-operation in this movement.

There have been to date six building permits, thirty-one plumbing permits, ten plumbing licenses, sixteen plumbing inspections, and three hotel inspections. The hotels inspected were found on the whole in good condition. A few rooms were found unprotected with fire ropes. These were called to the attention of the proprietor and a promise to correct same was secured.

REPORT OF THE HEALTH OFFICER OF FAIRFIELD FOR 1914. DR. W. H. DONALDSON.

To the Connecticut State Board of Health:

In submitting the report of the sanitary condition of the town for the past year the Health Officer is pleased to note a continuance of the most satisfactory record of several years. There have been no serious epidemics of disease nor even a visitation of any disease of a serious nature.

An increased interest in sewage and garbage disposal, clearing yards from litter, and more caution in contagious diseases, especially of tuberculosis, is very evident. Our death rate continues low, although higher than for two years, which is remarkably low.

These facts are especially noteworthy in view of our large increase in population and traffic. We are rapidly passing from a farming community to a more thickly settled suburban town. This fact is most evident in the increasing demands for the services of the Health Officer. The work of this departments demands more time than has been given to it and calls for the services of one who can give to it the necessary attention.

Our transient population of the summer, especially the constantly changing hundreds at the beach, calls for much attention. Aside from the weekly visitors thousands have swarmed the bathing beaches.

The permanent growth of the east end will be largely augmented during the coming year. Your attention is called to these matters by a desire to arouse a hitherto listless interest in meeting a most pressing sanitary problem. What has been said in previous reports (and ignored) is hereby repeated and with increased emphasis. Sewage must be provided or you will soon pay the penalty.

In Nichols Terrace district some twenty house-owners have united with the town school committee, to construct at their own expense, a sanitary sewer to discharge into the creek below. This will relieve a very trying unsanitary condition of this section and provide an outlet for the school sewage. At best this is only a temporary relief. By permission of a special act of the last session of the legislature the residents of Brooklawn Park have connected their sewers with the Bridgeport system.

Your attention is again called to the Bridgeport sewer discharging into Ash Creek at the bridge in violation of an injunction of the court. Evidence of this sewage was plainly noticeable upon our beach this summer, a fact of which your Health Officer warned you at the beginning.

The work against the mosquitoes has been kept up with unrelaxed vigilance. The ditches have been patrolled daily by workers, and to a limited extent oil has been used. In spite of all care the pest has been more numerous than was desired. This was largely due to the frequent rains

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filling the small pools that have escaped observation. Our people are indebted to Dr. Havard for his constant watch over this work.

Our rapid growth as a community and the popularity as a vacation town draws more heavily each year on the duties of this office. Sanitary science demands increased ability of the Health Officer. Much expert advice has been given gratuitously to residents desiring information upon matters of this nature.

* * * * * * *

In closing this report you are urged to consider the advisability of arranging for the medical inspection of schools. A recent act of the legislature empowers the school committee to do this. It could be carried out with the assistance of the local physicians or a school nurse at an expense that would be trifling compared to the results attained. A most practicable plan would be to unite with some nearby town to employ a physician as Town Health Officer and School Inspector, giving his whole time to the work. Medical inspection of schools is now being carried on in most progressive towns and must soon be provided here. The old adage, "An ounce of prevention is worth a pound of cure," is nowhere more applicable.

REPORT OF THE HEALTH OFFICER OF THE CITY OF NEW BRITAIN FOR 1914. DR. T. E. REEKS.

To the Connecticut State Board of Health:

On May 1st, 1914, the Board of Health was enlarged from three to six commissioners and by appointment of a physician, to be known as the Superintendent of Health, who shall give his entire time to the duties of the office, as provided for in the 1913 legislative changes in the charter of New Britain.

The report of the former Health Officer from September 1st, 1913, to May, 1914, is as follows:

Diseases reported—Tuberculosis 35, diphtheria 56, scarlet fever 16, measles 18, whooping cough, many, typhoid fever 4, nuisance complaints 347, bacteriological examinations 134.

His report further states, "The work of this department has been uniformly along the same lines as in the past few years, and has been productive of good results. Our mortality record has been low, our standing in reference to contagious diseases has been remarkably good, and sanitary conditions are better than ever."

Our report of contagious diseases from May to September, 1914, is as follows:

Disease reported—Tuberculosis 59, diphtheria 47, scarlet fever 5, measles 6, typhoid fever 8, bacteriological examinations 330.

The present Board of Health has opened a Bacteriological Laboratory for the cultural diagnosis of diphtheria, typhoid fever and tuberculosis, and general blood work as needed for diagnostic aid. This branch is being well patronized by the local physicians who appreciate the aid given by cultural methods.

To further minimize the danger of epidemics the present board has established the rule of second negative cultures before releasing diphtheria cases; also, the examination by the Superintendent of Health of all convalescent scarlatina cases before removing quarantine; also the thorough renovation, by painting, papering and fumigating of all houses vacated by tubercular subjects.

During the four months of the existence of the Laboratory three hundred and thirty (330) cultures have been examined for diphtheria and ty-

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phoid, as against three hundred and forty-seven (347) for the eight months previous when cultures were sent to the State Laboratory.

The present Board now has in its employ a Superintendent of Health, Clerical Help, an Assistant Sanitary Inspector, a Plumbing Inspector, and a Milk, Food and Meat Inspector.

The Milk, Food and Meat Inspector, in addition to his other duties makes frequent analysis of milk sold by 220 or more milk dealers.

The collection of garbage is now in the hands of one contractor who is responsible to the Board of Health. We are in hopes that this will eliminate much of the trouble arising from having thirty to forty or more private collectors.

New Britain, being strictly a manufacturing town, necessarily has a large number of tenement houses well filled or over-crowded with the employees and their families.

The greatest nuisance we have found has been the need of proper and sufficient ventilation, plumbing and its accessories; also the need of more cleanliness in the yards surrounding the dwelling houses.

During the past five months we have had hundreds of galvanized iron garbage cans installed for the proper disposal of garbage; scores of new and additional toilets put in, and numerous necessary repairs and renovations in and about the tenements.

This office has bent its efforts toward righting many of the unsanitary conditions existing in these tenement houses, and this will be our policy for the next several years to come.

The scope of the work instituted by the present Board and the complete change in the organization of the Board of Health is such that it should remain until it has been working for one year before trying to make any definite report of the work accomplished.

The Board of Health quarters are now located in ample offices in the City Hall.

REPORT OF THE HEALTH OFFICER OF NEW CANAAN FOR 1914. DR. E. J. O'SHAUGNESSY.

To the Connecticut State Board of Health:

GENTLEMEN:—I respectfully submit my report for the year ending August 31, 1914:

Cases of contagious diseases reported: Tuberculosis 5, measles 27, whooping cough 17, scarlet fever 5, diphtheria, active 13; carrier 55.

Complaints: Garbage 7, sewage overflow 3, filter beds 2, mosquito 1, of 13 investigations 8 were abated, 5 were "no nuisance." One of the latter was spite pure and simple.

Specimens of milk have been sent to the State Laboratory for examination at regular intervals.

The mechanical filter of the New Canaan Water Company has been inspected. The water has been well filtered. No complaints have been received.

The filter beds have been inspected. Less complaints have been received than in the last two years.

About the middle of October a diphtheria epidemic was discovered. There were 13 active cases and 55 carrier cases. An active case is one that is sick and shows symptoms of poisoning, a carrier is one that is not sick but carries and distributes the germs. The carriers are more dangerous than the active cases, because they are not suspected.

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I was criticized for the method employed in handling the epidemic.

First, because the houses were placarded.

Second, because the school was not closed.

Third, because all the pupils in the school were not cultured the same day.

Fourth, because all pupils absent from school the day of fumigation were required to show a negative culture card from the State Laboratory.

Fifth, because it was claimed "there wasn't any diphtheria."

The following explanation is made for the benefit of anyone who cares to know why.

I am not apologizing to any one for any of my acts.

First—The houses were placarded after consultation with my superior officers. Personally, I do not believe in placarding houses during an epidemic, unless you put policemen on all sides of the houses; at other times the placard relieves the state of responsibility, in that you enter at your own risk.

Second—The school was kept open, because it separates the sick from the well, at least, for a portion of the day; and if all parents and guardians had constituted themselves assistant health officers, the separation would have been absolute. It is also the method employed to-day in handling epidemics. It was followed in Stamford and Greenwich, and is the rule in New York City.

Third—The State Bacteriological Laboratory at Middletown, was not equipped to furnish me with 500 tubes at a moment's notice, therefore, I could not culture all the pupils in one day, which would have been the ideal way to do it. I used the tubes as fast as they were supplied me by the Laboratory.

Fourth—The need of all pupils absent from school the day of fumigation, showing a negative culture card from the State Laboratory, was that a number of parents had voluntarily kept their children out of school, therefore, these children had to be classed as suspicious and some of them proved to be carriers.

Fifth—All cases were proven by bacteriological examination at the State Laboratory. Any one wishing to see the proofs may do so, by applying to the County Health Officer.

The lesson taught by this epidemic is, that the schools should have medical inspection or better supervision. This need was touched upon in my last report, and written about in detail at the request of the Civic League later.

The ice ponds furnish a good grade of ice during the winter, but in the summer they breed mosquitoes in small pools around their edges. The icemen object to oiling these pools for fear of damaging the succeeding crop of ice.

I would offer as a suggestion to overcome this mosquito problem, that after the ice crop has been harvested and the skating season is over, that the ponds be drained, and if necessary a ditch or channel dug through the ponds, so that the waters would run through in a stream. This would do away with the mosquito nuisance, as it is a well known fact that mosquitoes do not breed in running water. The beauty of the ponds would be lost, but at present it is certainly marred by these stagnant pools.

The pond between Locust and East avenues was treated for years in this manner. This summer it was allowed to remain full of water. Portions of it are covered with a greenish scum, which is not pleasing to the eye or beneficial to health. I mention this to show the difference between the two methods of treating the ponds.

The water in the pond to the east of the East avenue bridge had to be allowed to go below its normal limit, on account of the building of a new

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bridge. This made it a breeding place, but it could not be avoided as the old bridge was deemed unsafe.

The big swamp in the neighborhood of the railroad station could be drained by digging a series of ditches about one foot wide, the depth to vary, all leading to a main channel. This method has been followed in treating the swamp land around Kaiser's Island and seems to work very well.

After paying the first cost of cutting the channels, the work would be more or less permanent, and I should not think it would cost a great deal to keep them open. An engineer would give a better opinion as to cost and permanence than I can, but I do know that it can be done, and that the mosquito problem in New Canaan is a serious one and should receive some attention.

The Civic League to demonstrate the need and use of garbage collection has employed a collector to collect garbage and ashes in the congested district. Since he has been collecting no complaints have been received from that district, which speaks for itself.

The need of vaccination remains about the same as mentioned in last report. Very few are being vaccinated. In New York City pupils are not allowed to attend school unless they have been vaccinated.

In the matter of making complaints to a Health Officer, the man who is afraid to sign his name to a complaint, generally hasn't any complaint to make.

Every man, woman and child in a community should act as assistant health officers, at least, as far as their own property is concerned, whether owned or leased. If this suggestion were to take root, and grow, there would not be any complaints against one's neighbor.

I desire to state that I have resigned my office as Health Officer, resignation to take effect as soon as my successor has been appointed by the County Health Officer.

REPORT OF THE HEALTH OFFICER OF SOUTHINGTON FOR 1914. DR. W. G. STEADMAN.

To the Connecticut State Board of Health:

DEAR SIR:—During the past year the health of the town has been very satisfactory. We have had no epidemics, and the prevalence of contagious and infectious diseases, with one exception has been slight, the exception is tuberculosis. This affliction seems still to be our "great white plague," and any sanitary measures which would promise partial relief are of the utmost importance. It is so insidious and of such slow development that the danger of exposure to infection is not realized by the public in general.

Twelve cases reported with seven deaths in a town of seven thousand inhabitants speaks for itself.

In eight cases of typhoid fever reported the source of infection was not determined though contamination of spring water was suspected in some of the cases. The spring was condemned after a bacteriological examination showed the water to be unfit for drinking.

The reservoir water supplied to the people is of excellent quality and sufficient quantity.

The ponds from which ice is cut and supplied to the people for culinary uses seem to be free from contamination and not exposed to objectional drainage.

What promises to be an undisguised blessing to us is a new sewer now under construction by the borough. The total length of pipes planned be-

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ing twenty-one and four-tenths miles (21.4) with a first unit of construction of thirteen and one-tenth (13.1) miles, together with an up-to-date disposal plant consisting of digestion tanks and filters. This will eliminate a large percentage of our privies, cesspools and drains.

The next important consideration, from a sanitary point of view, is a uniform and effectual system of garbage diposal. At present we can only recommend that it be either buried or burned. In the summer times holes should be dug where convenient, the excavated earth left by the sides of the holes, and each day as the garbage is dumped in the hole a thin layer of earth spread over it. In the winter time, if the garbage be kept comparatively dry it can readily be burned in the ordinary furnace, or even in the range in small quantities and at frequent intervals.

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All cases of scarlet fever and diphtheria were strictly quarantined; for five weeks, or longer in the former disease, and for a variable period in the latter.

Measles was placarded; parents warned of the danger of exposure for other children, and the other children of the infected family excluded from the schools.

Every house in which scarlet fever or diphtheria occurred was thoroughly fumigated and directions given for cleaning and airing.

Cases of typhoid fever were instructed in the disinfection of stools and materials used about the patients, the exclusion of flies and the screening of food. Cases of tuberculosis are visited and instructed how to avoid the spread of infection and in case of death the room and clothes are fumigated.

Fourteen school buildings were inspected as to their sanitary condition, and over two hundred children examined for infection.

Thirty-six samples of milk were sent to the State Laboratory for analysis, and the results reported to the dealers. In this connection, I am pleased to report the very good quality of milk in Southington.

One case of the illegal practice of midwifery was investigated and reported to the County Health Officer.

REPORT OF THE HEALTH OFFICER OF WEST HARTFORD FOR 1914. MR. FRANK H. STADTMUELLER.

To the Connecticut State Board of Health:

Thirty-nine cases of infectious diseases were reported during the year ending August 31st, 1914. These were as follows:

Consumption 10, diphtheria 8, measles 1, scarlet fever 4, smallpox 2, typhoid fever 5, whooping cough 9. Total, 39.

The smallpox cases occurred in the same family. Fortunately, the outbreak was in a rather isolated, single family house and the cases were quarantined and treated successfully at home. The Town School Committee promptly recommended vaccination of the school children and also provided for vaccination of children whose parents or guardians felt unable to meet the expense thereof. Numerous suspected cases reported were vigilantly observed with the gratifying result that no further development of the disease occurred. Smallpox cannot always be cared for successfully where it originates. The seriousness it possesses, in connection with the rapid growth of the town, indicates that the time has arrived when an isolation hospital should be provided. This need not be an elaborate affair, as a comfortable building capable of receiving from six to ten patients would be adequate if constructed with a view to enlargement, as needs

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arise. The expense of such a building is insignificant when measured by the security afforded thereby for the proper treatment of such cases. Furthermore, such a hospital could be used frequently to great advantage in handling other infectious diseases, particularly scarlet fever and diphtheria.

All the other diseases reported, excepting the typhoid cases, were sporadic and did not become epidemic. The typhoid cases were probably due to a common source of infection, the nature of which was not ascertained. The absence of any more cases points to some transient form of infection and thus prevented its discovery. More cases of consumption were reported than heretofore. Probably this is not due to an increase of the malady so much as to more complete and prompt reports of its presence.

The center sewer system is now practically completed. Sewer connections have been made with numerous houses in this district, and, within a few months the area embraced therein, as far as sewage disposal is concerned, will be in an excellent and approved sanitary condition. This system completes the provision of proper sewer facilities for needs of the immediate future with the exception of several hundred acres bounded approximately by Prospect, Levesque and Oakwood avenues and Seymour street. This land is at a level so low that it was not included in any of the adjacent systems heretofore constructed. However, the rapid growth now in progress in the adjoining systems, will soon cause development of the area under discussion. In fact, considerable building is now in progress, which will be further stimulated as soon as the proposed school building is erected on Oakwood avenue. The land of this area, much of it low, and all of heavy clay, possesses few natural advantages for the disposal of any considerable quantities of sewage either by cesspools or by surface distribution. Both topographically and geologically this land is of such a nature, that in the absence of proper sewers, as building progresses, it will simply become a vast sink and a corresponding menace to public health. The cause of the typhoid fever outbreak previously alluded to, may have been connected with one of the lobes of this area. Therefore, plans for a suitable sewer system and negotiations for an outlet from this area should receive attention at once.

The enlarged duties conferred upon the Health Officer by the resolution recently adopted by the town regarding plumbing inspection has been fully justified. Of the first forty inspections made under the provisions of the resolutions, thirty-seven of these disclosed defective work or material. Recent inspections have demonstrated great improvement, probably due to the knowledge that plumbing must now conform to the same regulations as those existing in Hartford.

REPORT OF THE HEALTH OFFICER OF THE TOWN OF MANSFIELD FOR 1914. DR. W. E. CRAMM.

To the Connecticut State Board of Health:

Ten years ago I made my first report to the selectmen of this town, and at this date I am elated over the changes which have taken place during the intervening time. When I received the appointment of this office, chaos existed in the notification, the quarantining and spread of contagious diseases. To-day, and I assume not too much, when I report, attending physicians report more promptly all contagious diseases; the people feel more secure when a neighbor's house is quarantined and the town is more protected from the spread of diseases. Not only are these facts true, but, since my appointment, more duties have been added.

During these ten years each year has found new responsibilities as follows: Collection of water and milk for analysis; inspection of ice ponds; examination of school children possessing some obscure eruptive disease or a suspicious throat; the enforcement of precautions in tubercular cases

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and co-operating with the commissioner of domestic animals in the suppression of glanders.

During the ten years of my occupancy of this office I have endeavored, at all times, to enforce the law and use safe discretion when the law permitted.

This year I am able to report only nine contagious diseases. Three of these were pulmonary tuberculosis and two of these were non-residents.

The other contagious diseases were as follows: Two of measles, two of scarlet fever and two of diphtheria. Of the two diphtheria cases, one was a reinfection.

As Health Officer, I have not assumed the entire credit for this safe and healthy condition of the town; but have considered the co-operation of the people and the physicians of the vicinity.

Of course there may be isolated cases of contagious diseases and even epidemics for which no one may be considered responsible.

I have found mild cases to do the most damage and most epidemics to have their start in the schools. The teachers can render a great help by dismissing from school any scholar that complains of sore throat, has a cough or appears languid. All of the contagious diseases have their initial symptoms under one of these conditions. Parents can protect the community by retaining such children at home.

The diseases enumerated were widely separated, except the reinfection of diphtheria.

During the year four samples of water were collected for analysis. Two were found unfit for drinking purposes. The many ice ponds were inspected, but no visible means of pollution were discernible.

A few nuisances were reported and abated. These were of a less number than in former years; but no nuisance should occur in a civilized community. No person should allow a carcass of an animal, however small, to remain unburied; refuse to be deposited along the highway or rubbish along the less frequented roads.

Inflammable rubbish should be destroyed by fire; while the best way to get rid of other refuse is to bury it. Sink drains should be deeply covered. Old tin cans and like rubbish collect water which subsequently becomes a breeding place for mosquitoes.

During August the schools were inspected and found in a sanitary condition.

During the year I visited several of the schools where the scholars had become infected with lice, itch or some eruptive disease.

My report respecting water and ice supply, sewerage and garbage disposal remains the same as in a preceding year.

REPORT OF THE HEALTH OFFICER OF PLAINFIELD FOR 1914.
DR. ARTHUR A. CHASE.

To the Connecticut State Board of Health:

In accordance with the public statutes I have the honor to submit this, my eleventh annual report as Health Officer.

During the year eighty-seven (87) cases of contagious diseases have been reported in the town of Plainfield as follows:

Smallpox	21
Measles	37
Scarlet Fever	8
Cerebro-Spinal Fever	1
Diphtheria	4
Whooping Cough	1
Typhoid Fever	6
Tuberculosis	9
	87

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No cases of infantile paralysis or ophthalmia neonatorum were reported. Six nuisances were reported and received attention.

On September 8, 1913, smallpox made its appearance in Plainfield, the first since December, 1902, and was prevalent until January, 1914. In all twenty-one cases, with one death, occurred. The age of patients varied from four weeks to fifty years. The cases showed varying grades of severity. The majority were of the mild type, several were more severe, confluent in type. One case presented one of the haemorrhagic forms of smallpox—Purpura Variolosa—terminating fatally. This was the only death from smallpox in the state since 1902. In this variety haemorrhages occur very early, during the initial stage and during the period of eruption. The patient usually succumbs within the first few days of the disease. This patient, however, lived one week after removal to the Isolation House, and was sick several days before removal.

Our first case was brought from Dayville. The patient, a man named Olsen, slept at a house in Dayville and acquired the disease. Later he returned to the home of Earl Davis at Flat Rock, was seen by myself, and later by Dr. Keating of Willimantic, who confirmed the diagnosis. As the Davis house was well isolated, it was thought best to quarantine Olsen there. Vaccination saved the other members of the family, with one exception. In this case vaccination modified the course of the disease (Varioloid), the patient being recovered in about two weeks.

The third case occurred in the new Lawton village at Plainfield, October 1st, 1913, and like the first case was contracted in Dayville. This man visited his brother there and assisted him in harvesting potatoes, using the same implements. The brother had reached the pustular stage of the eruption at this time. He broke several vesicles for the edification of the Plainfield brother, wiping his hands afterwards on the hoe handle. Fortunately, I was called to see this case before the eruption appeared, was told of his Dayville experiences, and consequently placed the case under immediate quarantine. When the eruption appeared, removed the family to the Isolation House at the Town Farm. Vaccination saved this man's wife and two-year-old daughter from the disease.

Before the appearance of the third case, I had ordered all school children, not vaccinated within five years, to be vaccinated at once. Also advised all adults not vaccinated within the same period, to have the same done immediately.

On the appearance of smallpox in Plainfield village, closed the public schools and places of amusement for two weeks, and instituted free vaccination. These measures served to check the spread of the disease from this case.

The fourth case—Burnett—occurred in Wauregan mill village. Like its predecessors this was also acquired in Killingly. All the rest of the cases occurred in Wauregan, except the last case. Some of these later cases came from Killingly and some from Brooklyn.

The Wauregan Mills Company did everything in their power to aid the health officials in limiting and controlling the disease. At their expense they furnished vaccinations for their help; a trained nurse at the mill for several weeks, to care for arms and provide dressings if needed; provided medical inspection and canvass of the village several times. The Health Officer of Brooklyn also co-operated. During the epidemic I investigated every case reported as suspicious, from whatever source of information. In this way I found one unreported case in the family of Peter Fournier, a girl with the eruption well developed. The County Health Officer prosecuted Fournier and he was fined seven dollars and costs, which he paid. From this concealed case, four others were directly traceable, including the fatal case of his son.

The Isolation House proved inadequate for all the cases, so the old Robinson house—next to Corey bridge—was fixed up and used as an an-

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nex. The bridge and the road by the Town Farm were closed until the house was unoccupied.

The last case of the epidemic was brought from Taftville to the old Lawton village at Plainfield. Was speedily quarantined and removed to the Isolation House. This occurred in January, 1914. Vaccination the previous October had rendered the inhabitants immune and no cases occurred from this source of infection.

Vaccination would have prevented several of the cases that occurred but they refused to be rendered immune and had to take the consequences.

Smallpox is still prevalent in the State of Connecticut, and Plainfield is liable to have more this fall and winter. The villages of Plainfield and Wauregan are fairly immune by recent vaccinations of the inhabitants. The other villages are not sufficiently protected against an epidemic.

German measles were epidemic in the village of Plainfield and to some extent in the whole town in the spring and early summer of 1914.

During May, 1914, when investigating for the source of two typhoid cases in Moosup, the water from the well at Moosup school was examined at the State Laboratory. No colon bacilli were found, but the water showed sewage contamination. As yet the town fathers have done nothing towards providing a new supply. At the residence of Carron, about 300 feet distant, the fall before it was found necessary to discontinue the well because of the presence of colon bacilli.

At the new school house in Plainfield, the toilet rooms need additional equipment.

The usual inspection of school houses has been made and with the above exceptions found in good sanitary order.

REPORT OF THE HEALTH OFFICER OF THE BOROUGH OF NAUGATUCK FOR 1914. DR. WALTER A. REILLY.

To the Connecticut State Board of Health:

I herewith submit my annual report for the year ending August 31, 1914.

CONTAGIOUS DISEASES.

	Measles.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Consumption.	Smallpox.
Sept. 1913.....	3	2	6	2	3	0
Oct. 1913.....	16	0	6	0	2	0
Nov. 1913.....	0	1	18	0	3	0
Dec. 1913.....	1	0	18	2	1	0
Jan. 1914.....	7	1	4	0	2	0
Feb. 1914.....	9	4	0	0	2	0
March 1914.....	10	1	3	0	1	0
April 1914.....	8	2	4	0	1	0
May 1914.....	0	0	1	0	1	1
June 1914.....	0	0	1	0	2	0
July 1914.....	0	1	3	1	2	0
Aug. 1914.....	0	0	1	2	3	0
Total	54	12	65	7	23	1

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The record of contagious diseases for Naugatuck shows that diphtheria and scarlet fever have been on the decrease for the past year. Diphtheria was practically epidemic in the borough throughout the calendar year of 1913.

SCHOOL INSPECTION.

The inspection of school children by physicians appointed for that purpose, has been carried on systematically for the past year and has been productive of much good. Particularly has this been noticeable in the prevention of the spread of contagious diseases. At the beginning of each term the pupils are inspected by the physicians and if any symptom of contagious disease be noted, the child is dismissed from school and the Health Officer notified. Throughout the term, any child who may be absent for three successive days or for one day at the beginning or end of the week, is not admitted to school without a permit from the physician having charge of that school. During the past year, on account of the prevalence of diphtheria, another rule was adopted, i. e., "No child having been absent on account of sore throat, shall be admitted without a permit from the Health Officer, which will only be issued after a negative culture from the throat shall have been obtained." In a few cases children were found in school suffering from diphtheria and many carriers of diphtheria germs were apprehended. The school inspection, I believe, has been a potent factor in the conservation of the public health in our community, as well as a desirable educative feature. In this connection, I would say that, despite as efficient quarantine as one may have, school inspection and supervision, improved sanitation, and all the other prophylactic measures one may adopt, our efforts for keeping a community free from preventable diseases are far from satisfactory; there is something more desired, and for ideal or as near ideal results as can be obtained, the most necessary thing is an Isolation Hospital. Isolation in the home is problematical, and when obtained, is often fraught with considerable expense to the individual. My reasons for advocating an Isolation Hospital are:

1st. Absolute isolation.
2nd. Better care for a large number of cases.
3rd. No cost to the individual, resulting in more cases being diagnosed and reported.
4th. Lowering of the death rate.
5th. Small cost to the municipality.

I hope to see the day when our cities and boroughs will have isolation hospitals, under state control, the cost of the same borne partly by the state and partly by the municipality.

SANITATION.

The sanitary conditions of the borough have shown a healthy progress; there have been more sewers built during the past year and a number of property owners have availed themselves of the opportunity thus afforded. Nuisances have been abated promptly. The tenement house law has been the means of ameliorating a number of unsanitary conditions, notably in the abatement of closet nuisances, and the improvement of the condition of the yards.

MILK INSPECTION.

The inspection of milk sold in the borough as well as the inspection of the dairies has been continued and its beneficent effects felt. The dairymen have shown a desire to co-operate with the Health Officer and the State Authorities in bringing their product up to a high standard. One conviction was obtained for the sale of adulterated milk.

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It has been noteworthy that during the past summer, the number of cases of diarrhoeal diseases among infants, and the infant mortality from the same have been infinitesimal. This, no doubt, was partly due to the cool summer, but I do not hesitate to say that considerable credit must be given to the different forces working to the end, that the milk given to infants may be rendered safe. So much is written nowadays and so much publicity given, in various ways to the fact that cows' milk may become as poisonous to an infant as carbolic acid or corrosive sublimate, that the milk is being properly cared for more and more, not only at the dairies and milk depots but also in the homes. This line of effort has shown commendable progress in the past year.

GARBAGE.

The garbage has been satisfactorily collected. As in previous years, this work has been done by contract and complaints have been few.

WATER SUPPLY.

The water supply has been up to the usual standard. The new reservoir which has been in course of construction for the past year and one-half is now in operation, and the changes necessary for utilizing this, have at times caused complaints, as far as the color and taste of the effluent were concerned, but the public have been safeguarded by frequent analyses, and as an extra precaution the water coming from the new reservoir has been treated chemically.

ABSTRACTS FROM THE ANNUAL REPORT OF THE HEALTH OFFICER OF THE TOWN OF ORANGE FOR 1914.
DR. C. A. BEVENS.

It must be borne in mind that we are no longer a village of three or four thousand souls, but a full fledged city of about fourteen thousand inhabitants. It must, therefore, be expected that with this number of people, contagious diseases must be with us the year around. Owing to our rapid growth our schools are increasing proportionately, and they are the great centers of distribution for contagious disease.

NUISANCES.

Under this heading are included garbage, privy vaults, cesspools, back yards, chicken coops, drains and mosquito breeding places, also unsanitary conditions of dwellings. One hundred complaints against the above named conditions have been investigated, and abated either by order or by personal appeal. As soon as the sewers now in course of construction are completed, the privy vaults and cesspools will be taken out of the list, but there will yet remain portions of the town the sewers will not reach, and those portions will have to be provided for in the old way. Our typhoid rate is not growing smaller year by year; last year we reported seven cases, the largest number ever reported up to 1913. We report this year fourteen cases (just double that of last year).

SCHOOLHOUSES.

I can say no more than in previous years that our schoolhouses are in fine condition. In one thing we are sorely lacking, and that is an efficient

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school inspection. The Health Officer has been preaching this move for some years, but it does not seem to be very near a solution. Until the parents grasp the significance of this great benefit to their children, and demand it, we shall move along as we are. During the past year the Health Officer has examined 225 children for all sorts of diseases sent to him from the teachers of the different schools. Ten throat cultures were taken of suspicious cases and four were found to be carriers. Five hundred permits were issued to return to school, for all of which for his great interest in the schools he has given his time freely and without charge. It is surely too great a burden with his other duties to place upon the shoulders of one man, and there are grave doubts as to whether it has been appreciated.

MEAT INSPECTION.

Chapter 214 of the Public Acts of the State of Connecticut places the control of all cattle slaughtered in the town of Orange in the hands of the Health Officer. There are two of these places in the town, Smith's on Campbell avenue, and the New Haven Fat Rendering Co. on Spring street. These places are under license from the Health Officer. Provision is made under the statute for the inspection of all cattle slaughtered in the town. Twenty-nine inspections have been made since the law went into effect. Four tuberculous cows and quite a number of calves under sixty pounds in weight have been condemned. Owing to the limited time at his disposal the Health Officer has not been able to follow up the inspections as closely as should have been done, neither was the money available for health work adequate for the purpose. The question of meat inspection is a very important matter. All of the meat butchered by Jewish butchers is not sold to Jews. The roasts and steaks you have on your table may have come from the slaughter houses of Orange. However, I have seen as fine beef in the Orange slaughter houses as ever came from Chicago.

ABSTRACT FROM THE ANNUAL REPORT OF THE HEALTH OFFICER OF WATERBURY FOR 1914. DR. T. J. KILMARTIN.

MEDICAL INSPECTION OF SCHOOLS.

DR. MONAGAN'S REPORT.

Total number of inspections made	47,415
Number special examinations made	290

PHYSICAL DEFECTS.

Enlarged tonsils	60
Adenoids	52
Pediculosis	514

EXCLUSIONS.

Pediculosis	138
Acute conjunctivitis	6
Acute sore throat	2
Sore throat	2
Scabies	3
Impetigo	6
Chickenpox	6
Number pupils sent to Open Air School	5

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DR. FRUIN'S REPORT.

Total number of inspections made	47,093
Number special examinations made	48
Number throat cultures taken	69

PHYSICAL DEFECTS.

Enlarged tonsils	400
Adenoids	216
Pediculosis	713

EXCLUSIONS.

Pediculosis	25
Ringworm	3
Acute conjunctivitis	4
Acute sore throat	5
Chickenpox	2
Impetigo	1
Mumps	1

A campaign, having for its object the reduction of infant mortality, was inaugurated during the past year, consisting of educational measures to mothers, home treatment and instructions to mothers by the Visiting Nurses, distribution of modified milk, and information to those in care of infants through the public press. Statistics are not yet available for comparative purposes, but evidence of a marked decrease in infant mortality is apparent.

EXTRACT FROM ANNUAL REPORT OF THE HEALTH OFFICER OF BRANFORD. DR. C. W. GAYLORD.

We do not fully realize the seriousness and cost of even small epidemics. The financial loss to the public is considerable. To the individual, the expense of caring for the sick, the loss of time, prove serious burdens to many, but, more serious than the financial loss is the mental and physical suffering caused by illness and death of loved ones. To quote from a former report, "The influence of preventable diseases, of which tuberculosis, typhoid fever and malaria may be cited as examples and in which category may be included the contagious diseases of childhood and excessive infant mortality, on the economic welfare of a community and state is becoming more and more recognized and that community is culpable which neglects to take cognizance of modern advancement and eliminate within its borders of conditions which tend to the development and spread of such diseases." The public expect and have a right to expect reasonable protection from the financial loss, the suffering and sorrow resulting from the presence of these more or less preventable diseases.

Owing to the unusual prevalence of contagious diseases, your Health Officer viewed with some apprehension the opening schools for the coming year. The attention of the School Board was called to the necessity of a more thorough cleaning and renovating, especially of those schools in which scarlet fever and diphtheria were prevalent. The suggestion met with the approval of the School Board and was sanctioned by the Finance Committee. Under direction of proper committees the work was very thoroughly done.

Another serious question was what to do with the free text books used in the schools. That they might be a possible source of danger was unquestioned and ordinary methods of fumigation were useless. After var-

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ious experiments, your Health Officer decided to attempt their renovation by dipping them in carbolized gasoline. All books in the Center schools, in Stony Creek, Canoe Brook and Harbor street were so treated. Not only books but kindergarten and other material used in schools were treated. The expense of this additional renovation and disinfection was considerable but am convinced it was money wisely expended and will receive public approval. The schools were never in better sanitary condition than at the opening of the present school year.

Among undertakings making for civic betterment, would again call attention to the work of the District Nurse. This work has now got beyond the experimental stage. I would again call attention of the public to the importance and success of the work she is doing and would request for the association the hearty support of all interested in relief of suffering and civic betterment.

The Woman's Council has continued this summer the work organized last season in vacation schools and with other work planned, I am sure will be a strong factor in civic betterment.

EXTRACT FROM THE ANNUAL REPORT OF THE HEALTH OFFICER OF ENFIELD. DR. GEORGE T. FINCH.

It is the duty, as it is the ambition of the Health Officer, to make his town a better place to live in, through his efforts. Better from the view point of health, more attractive to its citizens, more desirable to outsiders. With this object in view he must correct violations of sanitation, and point the way to good living. He must abate nuisances and prevent the accumulation of rubbish and unsightly material. He must be prompt and efficient in protecting his people against the spread of contagious discases. In fact, he must do everything in his power to add to the safety, the well-being, the comfort of his people. Rather a large contract this, and one difficult of fulfilling. Fortunately in the course of the year's work aid comes to him through various channels. Were this not the case many important matters would escape notice. This help is thankfully received and is hereby gratefully acknowledged. In particular would we express our appreciation of assistance that comes from the physicians of the town. They are ready on all occasions and under all circumstances to lend a helping hand. Prompt in reporting their cases, careful in adopting precautionary measures, their help is invaluable. The Board of Selectmen and the Board of Sewer Commissioners co-operate in the work. The district fire chief is helpful. It will doubtless be a surprise to many of our people to learn what an important and extensive work the Metropolitan Life Insurance Co. is doing along lines that make for good health and clean living in our town. In selecting Miss Johnson, the District Nurse, to attend to its policy holders in case of sickness the company has secured not alone a capable and efficient nurse, but an extremely tactful and faithful helper. The company has issued and its agents are distributing a number of pamphlets on subjects vital to human welfare. The topics are well chosen, the subject matter is instructive and pleasant reading. We all are apt to think that we are sufficiently informed in regard to the proper manner of conducting our lives, of managing our homes, of safeguarding our health, of shutting out from our houses all harmful influences and letting in only the beneficial and helpful. A careful reading of this little library of well expressed, well digested information will easily convince us that we have yet much to learn. Good results must certainly come from the efforts this company is making to better the lives of its policy holders and they will be reflected throughout the community at large.

The sanitary condition of our town is most favorable and we point with some feeling of pride to those measures in operation to insure its

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future sanitation. We have a very satisfactory sewer system. This system is under the supervision of men who are competent and who are interested in their work. Men who take actual pride in the perfect working of the system, who aim to keep it at the highest point of efficiency. Practically all householders have taken advantage of sewer privileges We have in smooth and satisfactory operation a system of garbage collection. Moist garbage, anything that is liable to create a smell, is gathered three times a week during the warm weather, at least once a week at all seasons. Dry garbage is collected on Friday of each week. This system keeps the town fairly clean at all times, but to make assurance doubly sure we have a clean-up-week once a year. First Selectman Cope has shown active co-operation in all matters of sanitation and has provided an incineration oven at the public dump for burning papers. Papers are not received by the town team but individuals may transport them to the dump on Fridays and they will be burned under supervision. The Hartford Carpet Corporation carries on a garbage collection system of its own. This system handles about twice as much garbage as the town system. The corporation maintains its own dump, employs its own team and man, thereby saving the town an appreciable bill of expense. Outside of cities, where the health authorities are backed up by the machinery of the city government, you will seldom find more efficient measures adopted to conserve public health and safety than those in operation in our town at the present time. To no one man is due the credit for this condition of affairs. The whole community seems to have awakened to the fact that cleanliness leads to better conditions of health and comfort.

REORGANIZATION OF GREENWICH HEALTH DEPARTMENT.

(From Annual Report of Dr. A. W. Klein, Health Officer.)

In accordance with the special act of the legislature enabling the Town of Greenwich to establish a Health Department, an appropriation was made at the town meeting held in October, 1913.

The sufficient amount of money was furnished to established a laboratory and employ a force of assistants to the Health Officer to properly conduct a constructive health campaign.

Offices were obtained in the Maher Building, where the laboratory equipment was installed, and after careful selection the following officers and employees were appointed.

ORGANIZATION.

A sanitary inspector, who is also to do the laboratory work. An assistant sanitary inspector, who combines the work of general sanitary inspector, plumbing inspector and fumigator. A veterinarian, who in addition to the prevention of diseases in animals, assists in the work of dairy inspection. A district nurse, and a stenographer. The office of the department and the laboratory are open daily from 8:30 a. m. to 5:30 p. m.

SEWAGE DISPOSAL IN LAKEVILLE.

(From Annual Report by Dr. Wm. B. Bissell, Health Officer.)

In regard to our public water supply, which I believe at present to be above suspicion, it seems to me in order to reassure the public, samples should be sent to the Connecticut laboratory at least twice every year. It

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may interest the public to know that Lake Wononscopomuc into which the effluent pipe from the sewerage system of the Connecticut School for Imbeciles has been allowed to discharge will be cleared as soon as possible. Energetic steps are now being taken by the school directors to remedy this bad state of affairs. There will be no sewage of any kind whatever allowed in the future to enter this lake, which is the natural and only ice supply for Lakeville and its immediate vicinity, and has once been used for an additional water supply and at any time may have to be so used again. Closely connected with the lake agitation is also the question of a sewerage system for the village of Lakeville. For a village as up to date in every other respect it is certainly a back number without an adequate sewerage system. As Health Officer I believe such a system is imperative and without one grave peril is imminent. There are cesspools without number in foul and unsanitary condition throughout our town. There are many wells in close proxiunity to cesspools and there are also privies in the same unsatisfactory condition, some of them close to the wells. There is not the least shadow of a doubt about the contamination of these wells with either sewage or fecal matters. Until we have an efficient sewerage system in every village in this town it is the duty of the selectmen to provide some means by which the inhabitants may dispose of the contents of their cesspools and privies when necessary. Some place should be procured in each village where the cesspool sludge and privy contents can be buried. A suitable wagon to carry this in should be provided by the town and charge made for the use of this wagon and its service. Privies should be cleaned twice during the summer and just before freezing.

SMALLPOX IN MONTVILLE.

(From Annual Report of Dr. Morton E. Fox, Health Officer.)

I discovered a case of smallpox on October 9th, 1913, in a French family. The case was confluent in type and very severe. I immediately visited the school and examined every child and found two that were convalescing from smallpox. I visited their home and found four more with the disease. The family consisted of seven, six of whom had it, one escaped, that one having been vaccinated. These cases had not been reported as they should have been, consequently the spread of the disease, unnecessary expense to the town and great inconvenience to the people.

I experienced great difficulty in getting the support of some classes and especially a local physician, who persisted in stating that it was chickenpox. To convince all, I called the secretary of the State Board of Health, also the Health Officers of Norwich, Norwich Town, New London and Dr. John G. Stanton, of New London, and they without exception pronounced it genuine smallpox.

I placed every house under strict quarantine where the disease was discovered, and vaccinated all other members of the family that would submit to the operation.

The Health Officers of Norwich and New London refused to allow the steam and electric roads to stop cars in the Town of Montville. I conferred with the above officers and had the order modified so that those that passed inspection should receive a pass and be permitted to board the cars, which relieved the situation greatly. The town was compelled to place constables on all cars, to insure enforcement of the order. This was a great source of trouble to the public as well as myself. This was continued for fifteen days. There were eleven cases in all.

I traced the first case to Danielson, Conn. It was direct contagion. Vaccination was resorted to in a large number of persons, and no case appeared in a person having been vaccinated.

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LABORATORY OF THE STATE BOARD OF HEALTH OF CONNECTICUT.

Report of the Director.

The period covered by this report extends from October, 1912, to October, 1914. During the first year the appropriation for salaries and maintenance was $8,000. During the second year it was $9,000. Of this, during the first year $5,400 was devoted to salaries; during the second year, because of readjustments in the staff, the amount devoted to salaries has been $4,707.

Laboratory Staff. For the first nine months covered by this report the Laboratory Staff was as follows:

Director and Bacteriologist—H. W. Conn.
Chemist—James A. Newlands.
Assistant Bacteriologist—R. V. Story.
Assistant Chemist—F. Lee Mickle.
Assistant Bacteriologist for milk work—Lena R. Potter.

Beginning with July, 1912, a reorganization of the Laboratory was necessary because of the resignation of Mr. Newlands and Mr. Mickle. It was decided by the Board not to fill the place of chemist, but to place supervision of all of the work in the hands of the director, employing such assistants as were needed for the detailed laboratory work. During the last year, the following has been the Laboratory Staff:

Director—H. W. Conn.
Assistant Bacteriologist—R. V. Story.
Assistant Chemist—P. E. Bransfield.
Assistant—Lena R. Potter, Ira D. Joel (beginning December, 1913).
Assistant—Ira V. Hiscock.

During the summer of 1914 special work authorized by the Legislature, calling for an examination of the sewage pollution of the rivers of the State, made it necessary to engage a special assistant in connection with this survey. Mr. R. C. Meeker was appointed as such assistant, the understanding being that this appointment is only a temporary one for the purpose of this special work.

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ROUTINE WORK. GENERAL STATEMENT.

The scope of work of the Laboratory has been constantly increasing since its start. With some fluctuations, the total number of specimens examined has also been growing, in spite of the fact that the various cities of the State are one after another establishing laboratories of their own. One of the functions of a State Laboratory appears to be to teach the cities the value of bacteriological laboratories for diagnostic work, and especially as an assistance in the control of epidemical diseases. As the cities realize the value of this work, they soon appreciate the advantage of having a local laboratory of their own, where they can obtain results somewhat more promptly than when it is necessary to depend upon transportation of specimens by mail or express, as is the case when a central State Laboratory is utilized. This result is found to follow all over the country, so that the more valuable a State Laboratory shows itself to be, the more its work is taken from it by local laboratories.

At least six of the largest cities in Connecticut have now organized laboratories of their own, and as fast as such laboratories go into operation there is diverted from the Laboratory of the State Board of Health a considerable portion of the work which it has previously done. As a consequence, the increase in the work of a central laboratory gives no idea of the development of the bacteriological work in the State. The value of a State Laboratory to the public is therefore, not to be measured by the actual amount of work that it does, but really by this work, in addition to similar work done in local laboratories, which have been stimulated into existence by the example of the State Laboratory. While the figures below show that the work of this Laboratory has been increasing constantly since its start, they do not give a fair estimation of the value it has been to the public.

Since some part of the routine work of the Laboratory is being constantly assumed by the newly developing laboratories in the cities, this Laboratory has found it possible and necessary to undertake and adopt new kinds of work. The lines along which laboratories of hygiene can make themselves useful to the public are ever increasing, and as shown below new problems are coming to them each year. The demands made upon them are almost infinite in variety. It seems to be generally assumed over the State, that this Laboratory is prepared to do any kind of chemical, bacteriological, or pathological work for which there may be a call. It seems to be desirable therefore at this place to state specifically the purposes for which this laboratory was organized.

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PURPOSES OF THE LABORATORY.

Established as it was as a part of the work of the State Board of Health, its purpose from the outset has been to assist Health Officers and others in the control of public health. For this reason, it undertakes a diagnosis of contagious diseases when they are open to laboratory methods. It has not, however, been thought that it was a proper function of a laboratory, supported at public expense as this must be, to carry on distinctly pathological work which would be for the benefit of private individuals or physicians alone. This, however, has not been generally understood; and we are constantly receiving requests to undertake pathological work, the assumption being made by the physicians that a Laboratory of this sort is open freely for their use for all kinds of diagnoses. These requests we are always obliged to decline. We are neither authorized to undertake them, nor are we at present properly equipped to do that kind of work.

The chemical department of this Laboratory was organized primarily for the purpose of an examination of the public water supplies of the State. It is recognized by the Board that a control of the purity of the water supplies is a part of the matter of controlling public health, and it is, therefore, a proper function of their Laboratory to make examinations of suspected water supplies and of public water supplies in general, which furnish drinking water to the various towns of the State. This Laboratory has been, therefore, authorized to make analyses of water in public water supplies and of private supplies where the County Health Officers considered that matters of public health were concerned. It has not hitherto been regarded by the Board as feasible to authorize us to undertake the analysis of purely private supplies. While it is true that in some states Board of Health Laboratories do undertake the analysis of private wells and springs at the request of almost anyone, it has not been regarded as possible for this Laboratory, with its limited equipment, to undertake such an extended work as this might involve, and it has been regarded as only fair that private water supplies should be examined by private chemists rather than at public expense. This, however, has not been understood by the public in general, and apparently not all of the Health Officers in the State appreciate it; because we are in constant receipt of requests to make examinations of water of a purely private character, for which there seems to be no public need. It is always necessary for us to refuse such requests, and unfortunately, such refusal frequently produces hard feelings. It is, however, the function of this Laboratory to make examinations of water wherever matters of public health are

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concerned, and this is ruled somewhat freely to include some waters that though really private supplies may in a sense be regarded as public supplies, since they are used by a number of families.

After the establishment of the chemical department there began to come requests to the Laboratory to make examinations of the effluents of sewage plants in the State, for the purpose of determining whether such plants were efficient in their action. This work was regarded by the Board of Health as legitimate for the Laboratory, and has been done somewhat extensively in the last few years.

The chemical work of this Laboratory has been practically confined to these two problems, and unless greater facilities and larger appropriations can be furnished, must be confined to them, for this work in itself furnishes about all that we can do. It seems to be a general impression, however, that the Laboratory of the Board of Health should be prepared to do any kind of chemical work that has any remote bearing on the problem of health, and numerous requests for a chemical analysis have been constantly reaching us. We have, therefore, to repeat that the only work of a chemical nature that this Laboratory is prepared to undertake is that of water analysis for the purpose of determining the fitness of water for a drinking supply, and that of the analysis of sewage filter beds, for the purpose of determining efficiency.

TABLE I.

Showing Work of Laboratory Since Its Beginning.

	1906	1906-7	1907-8	1908-9	1909-10	1910-11	1911-12	1912-13	1913-14	Total
Tuberculosis,	443	901	1,087	1,544	1,764	1,649	1,619	1,503	1,515	12,025
Diphtheria,	269	845	880	2,238	4,129	2,774	3,185	6,582	3,716	24,618
Typhoid,	146	383	528	523	606	783	833	975	716	5,493
Malaria,	....	....	86	93	110	103	108	97	93	690
Rabies,	....	47	40	13	10	19	39	14	24	206
Glanders,	....	....	....	....	....	6	317	455	285	1,063
Syphilis,	....	....	....	....	....	....	.....	.....	562	562
Milk,	....	....	974	1,178	2,517	3,576	4,142	4,193	3,764	20,344
Water and Sewage,	83	110	390	452	470	574	472	572	606	3,729
Miscellaneous,	....	....	57	53	52	58	68	80	105	473
River Water,	....	....	....	....	....	....	.....	.....	768	768
	941	2,286	4,242	6,094	9,658	9,542	10,783	14,471	12,154	69,971

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It will be noticed from this table that there has been a general tendency toward an increase in the amount of work, and also that during the present year, for the first time, the Laboratory has undertaken the Wasserman test for syphilis. While the actual number of Wasserman tests made during the year is not large as compared to the number of diphtheria specimens, the amount of work involved is much greater. The Wasserman test is long and complicated and its introduction as part of our routine, although it has not added largely to the total number of specimens examined, has very decidedly increased the amount of work that is done, because of the large amount of labor involved. Another addition to the routine work added during the last year has been that of the study of the river waters of the State to determine sewage pollution, as described below.

RESEARCH WORK.

It is always the desire of a Laboratory of this sort that where possible, research work could be carried on by the members of its staff. This work, however, must always be limited. The first demand that must be made upon the members of the staff is that the routine should be carefully and thoroughly performed. Routine work is extremely variable in amount; sometimes it is very excessive and calls the constant attention of all of the staff. At other times the work becomes lighter, and gives considerable leisure. The only way that research work can be carried on, therefore, is to make use of the times of leisure which are secured between intervals of excessive work. Such a method of carrying on research is not satisfactory, for research work to be properly performed, must, as a rule, receive constant attention. During the past two years it has been impossible to do any extended work of research in this Laboratory. In the present report there is no such work that is ready for report, although some pieces of research are now under way and, it is hoped, may be completed in the course of another year.

NEW WORK.

One of the important functions of a State Laboratory is to keep careful watch for new developments along the line of routine work, and to apply them practically where they seem to be wise and useful. Research laboratories all over the world are constantly introducing new methods which may be improve-

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ments over old ones, and are also ever suggesting new problems for laboratory diagnosis and analysis. Many of the new methods are impractical and cannot be applied with success in a general routine laboratory, while others prove extremely useful. It is one of the functions of a State Laboratory to keep in touch with that which is going on elsewhere, and to utilize and apply any new valuable methods that may develop anywhere. The extremely rapid growth in laboratory methods for diagnosing infectious diseases is constantly presenting new problems and new claims. To distinguish among the new methods between those that are practical and those that are impractical is not always easy. It will be seen, however, from Table I. that this Laboratory has been gradually adopting, not only new methods, but undertaking the solution of new problems. Some new problems arise every year. During the last two years two somewhat extensive problems have been undertaken, the Wasserman test, and the examination of the rivers of the State for the determination of the extent to which they are sewage polluted.

Tables II. and III. show the routine work of the past two years,

TABLES II. AND III.

Summary of Work for the Past Two Years.

1912-13.	Tuberculosis	Diphtheria	Typhoid	Malaria	Rabies	Glanders	Milk	Water and Sewage	Miscellaneous	Total
October,	107	808	114	9	1	54	368	57	6	1,524
November,	100	1,770	69	10	..	99	305	44	4	2,401
December,	100	434	43	1	1	30	290	48	6	953
January,	152	481	49	1	..	50	377	37	7	1,154
February,	132	551	47	5	2	13	289	24	17	1,080
March,	165	1,157	33	6	..	40	343	38	8	1,790
April,	154	311	54	15	..	23	309	45	7	918
May,	159	546	64	10	3	36	393	39	5	1,255
June,	137	119	69	5	4	32	407	55	6	834
July,	99	74	92	12	..	30	400	53	3	763
August,	81	103	162	12	1	24	394	69	6	852
September,	117	228	179	11	2	24	318	63	5	947
Total,	1,503	6,582	975	97	14	455	4,193	572	80	14,471

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1913-1914	Tuberculosis	Diphtheria	Typhoid	Malaria	Rabies	Glanders	Syphilis	Abortion	Milk	Water and Sewage	Miscellaneous	Total
October,	131	679	118	10	1	18	3	...	319	66	3	1,348
November,	104	831	66	8	2	24	24	...	264	48	6	1,377
December,	138	633	61	5	...	37	45	...	334	53	4	1,310
January,	123	360	45	7	3	18	41	...	271	37	6	911
February,	135	219	35	6	...	21	41	...	229	44	6	726
March,	131	154	36	5	1	31	50	...	285	40	4	737
April,	137	124	41	8	3	29	58	...	334	41	4	779
May,	153	228	46	5	1	25	60	...	360	45	6	931
June,	127	164	46	10	1	3	54	2	350	57	7	819
July,	105	101	47	10	7	11	81	...	355	184	3	904
August,	127	69	81	7	3	18	44	45	305	427	4	1,130
September,	104	154	94	12	2	50	61	1	358	340	6	1,182
Total,	1,515	3,716	716	93	24	285	562	48	3,764	1,374	57	12,154

TUBERCULOSIS.

Table IV. gives a classification of the specimens of tuberculosis examined in the last two years.

TABLE IV.

Tuberculosis Specimens Classified.

	Positive	Negative	Total
1912-13	329 22%	1,174 78%	1,503
1913-14	381 34%	1,134 66%	1,515

The methods that we use for examining tuberculosis specimens is by the use of anti-formin and legroin, with centrifuging. The details of the method now used is however slightly different from that described in the last report, and is as follows: The sputum in the wide mouthed bottles is mixed with about 2 c. c. of anti-formin, and at the same time there is added a sufficient quantity of legroin to fill the bottle about to its shoulder. If there is only a small amount of sputum in the bottle, smaller quantities of anti-formin and of legroin

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are used. The bottles are then shaken for about ten minutes in a sputum shaker and left standing for half an hour, and then are centrifuged. The rest of the procedure is as described in the last report. The difference between the methods now used and that used formerly is the addition of the legroin at the same time as the anti-formin is added. We have found that the results are rather more satisfactory and the specimens are somewhat more easy to handle than when the legroin was added after the sputum had been shaken in contact with the anti-formin, as was formerly done.

DIPHTHERIA.

The number of specimens examined of diphtheria during the period covered by this report is 10,298. The classification of cases is shown below in Table V.

TABLE V.

Diphtheria Specimens Classified.

1912-13	Positive	Negative	Doubtful	Total
Diagnosis	406	1,439	3	1,848
Release	527	965	21	1,513
School cases	241	2,974	5	3,221
Total	1,174	5,379	29	6,582
1913-14				
Diagnosis	313	868	17	1,198
Release	234	636	29	899
School cases	147	1,472	..	1,619
Total	694	2,976	46	3,716

The large number of specimens examined during the years 1912-13 was due chiefly to epidemics appearing in schools and the energetic action of Health Officers in endeavoring to prevent the spread of such epidemics, by the method of detecting school carrier cases. The most interesting example of the value of this method of controlling diphtheria was a test in the schools in Middletown. In October of 1912 there appeared in the public schools several cases of diphtheria, and

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the local Health Officer, with the assistance of the school nurse and the Superintendent of Schools, determined to try, by a laboratory examination of all scholars, to prevent, if possible, the spread of an epidemic of this disease. Arrangements were made at once for examining swabs from the throats of all scholars in the central schools of that city as rapidly as possible. There were in the schools thus tested about fifteen hundred scholars and some of these had several examinations made of their throats. The results of the first examination was to show a small number of carrier cases, about fifty in all. Some of these carrier cases showed very few diphtheria germs, while others showed them in large numbers. As soon as a carrier case was discovered, the scholar was notified that he would not be allowed to return to school until a later examination should show that his throat had become cleared up of the diphtheria germs. Other swabs were taken from each of these cases every few days, and as a rule the scholars were able to return to the school, in a period of time varying from a week to two or three weeks. In a few cases the period of detention was considerably longer. The most interesting case of all was that of a small boy of about twelve, who was found very early in the epidemic, to have nearly a pure culture of diphtheria germs in his throat. This was almost the first case discovered in the schools. This boy was not in any degree sick, and there was no real suspicion that he was clinically ill. Nevertheless, examination of swabs from his throat continued to show practically pure cultures of typical germs. Repeated examinations were made from his throat for a period of about four months, without seemingly showing any signs of diminution in the number of diphtheria germs. During this time the boy was kept from school, but allowed to go out of doors freely, being kept under observation but not under strict quarantine. After a period of four months, without any apparent signs of diminution in the number of diphtheria germs in his throat, it was determined by his physician to try the effect of spraying his throat with a culture of normal throat Staphylococci. A bouillon culture of such organisms was prepared in the Laboratory, was furnished to the physician, and sprayed into his throat two or three times on successive days. By the end of the first week examination of his throat showed very few diphtheria germs left, and a second examination, a few days later, showed nothing but normal throat Streptococci without any trace of diphtheria germs. The boy was released from quarantine, and allowed to return to school. No further examinations were made in this case to determine whether the diphtheria germs came back later or not; but no secondary

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cases occurred as the result of allowing him again to associate with others in school. It is hardly necessary to point out the likelihood of a serious continuation of diphtheria in the schools if this boy had been allowed to continue to attend school for a period of four months, carrying with him as he did for this time a practically pure culture of diphtheria germs. Unfortunately, the rush of work at the time made it impossible to test the pathogenic characters of the cultures from the throat of this scholar. In two other similar cases cultures of normal Streptococci were furnished physicians to use as a spray in the throats of persistent cases. In each case the throat cleared up speedily and in no case were there any evil results.

Several other incidents in this examination were interesting. In most cases the carriers detected at school neither at the time of examination or later showed any signs of clinical symptoms. The parents of these children were sometimes indignant that their children, who seemed to be perfectly well, should be sent home. In one of these cases within two weeks the brothers and sisters of the carrier, with whom he associated in his own home, came down with cases of clinical diphtheria, showing beyond a doubt that this individual was a carrier of pathogenic organisms. In some other cases the Laboratory detected the presence of the diphtheria germs in scholars, clinically well, but who, two or three days afterwards, developed cases of diphtheria which were so recognized by clinical symptoms. In the majority of cases of carriers, however, there were no clinical symptoms at all and nothing special to prove that they were a source of danger to others.

The general result of the campaign was interesting and satisfactory, for after it had been possible by laboratory means to exclude temporarily from school the carriers above described, no new cases of diphtheria appeared. The incipient epidemic was crushed out almost at once, and what appeared to promise a serious time in the public schools in the city, beginning as it did early in the fall, was checked with the very few cases, about twenty in all, and with no deaths. In the course of a very few weeks all cases had disappeared, and the city remained practically free from diphtheria for the rest of the year. It was interesting to note in contrast to this that in other cities in the State diphtheria was quite abundant during the winter. In other towns of about the same size that did not adopt this method of handling an epidemic in the schools, the disease continued to appear constantly during all the fall and winter months, developing in some cases a large number of cases with several deaths.

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In addition to this experience in Middletown, similar results were obtained during the year 1912-13 in several other towns in the State. The quickness with which the diphtheria epidemic was checked depended upon the rapidity of the examination, and the stringency of the exclusion of the carrier cases from the schools. In at least one town, an intense opposition was raised to this method of handling the cases on the part of some who, failing to understand the meaning of bacillus carriers, thought it was entirely unnecessary to take from the schools seemingly well scholars, even though the germs were found in their throats. Unfortunately, some of the physicians added to the feeling by insisting that there were no such things as bacillus carriers, and that the whole method was useless. Such opposition to public methods of checking diphtheria epidemics have been frequently met not only in this State but elsewhere; but as rapidly as the information of the real meaning of this method can be distributed, so rapidly will the public welcome rather than object to this method of handling diphtheria epidemics.

We wish again here to emphasize the advantage of this method of handling school epidemics over the older method of closing the schools when diphtheria makes its appearance. As shown by the experience of this state in the last two years, as well as by the experience in many other places over the country, it is perfectly possible to check almost immediately the spread of a diphtheria epidemic by the method of detecting the carriers and isolating them even for a few days. Not only does this method avoid the undesirable closing of the schools, but it also keeps the epidemic in the hands of the public Health Officers. It is evident that if the schools are closed the Health Officers have no longer any control over the individual scholars who scatter themselves widely over the town, after which the Health Officer's attention is called to the scholars only when a typical case of clinical diphtheria makes its appearance somewhere in the district. Under these circumstances it is extremely difficult or almost impossible to keep the epidemic under control. Where, however, the children, who are the most common distributors of the disease, and most subject to it, are kept in school, suspicious cases can be recognized at once, can be properly treated, the development of serious clinical cases can in most cases be prevented, the epidemic can be easily controlled and usually promptly checked. There is no question that this method of handling an epidemic of diphtheria is far superior to the older method of closing the schools, and should be tried everywhere when diphtheria makes its appearance among schools of our public school system. Experience is rapidly showing

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that this method is efficient in controlling diphtheria epidemics. It is perfectly possible to hold diphtheria in check by the detecting and isolation of carriers. It is not possible to control it by means of disinfection of homes or public rooms, however thoroughly carried out. Many Health Officers, in these days, regard the disinfection of rooms as a useless trouble, not worth the cost and bother involved therein, and as having little or no effect in checking the distribution of the disease. It is certainly of little value as compared with the control of the disease by the detection of bacillus carriers.

An interesting instance of a diphtheria examination was obtained in connection with the two cases of *mastoiditis*. Two children suffered from ear trouble, in one of whom it was severe enough to require the mastoid operation. Recovering was not as rapid as was to be expected after the operation and the discharge of pus continued for some time from the ear, not only in this case but in the other child, who did not have the operation. The mother of the children, who was in attendance, subsequently showed a case of clinical diphtheria, indicated by clinical symptoms verified by laboratory examination. This led to the examination of the pus discharges from the ears of the two children, and it was found that in both cases the pus was loaded with typical diphtheria bacilli. Doubt was raised by the physician in charge as to whether the organisms present were really pathogenic or simply of the pseudo-diphtheria type. They were therefore isolated from the pus and obtained in pure culture, and were tested by inoculation into a guinea-pig. They killed the guinea-pig within forty-eight hours, and a culture of typical diphtheria organisms was also recovered from the guinea-pig after death, demonstrating beyond peradventure that they were pathogenic.

There could be no question, therefore, that in this case mastoiditis was caused by or at least accompanied by the development of diphtheria germs. After the detection of the diphtheria germs in the pus the use of antitoxin produced prompt results, and recovery took place rapidly.

During the year 1913-14 the amount of diphtheria was less than in the previous year, due possibly to the free distribution of diphtheria antitoxin, by the Board of Health. At all events, diphtheria epidemics did not develop in the public schools, and the laboratory was called on only in a few instances to make examinations of school children for the purpose of detecting carriers. This reduction is shown in the figures in the above table.

LABORATORY METHODS: We still continue to distribute around the state swabs rather than serum tubes, depending upon inoculating the serum tubes after the swabs have

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reached this Laboratory. We recognize the disadvantages of the method, but in spite of them we are convinced that it produces less confusion and on the whole more satisfactory results than the method of furnishing the doctors with the serum tubes under any plan that we have yet been able to devise.

It is our custom to make examination of all specimens sent in for diagnosis that reach us by the morning mail, in the afternoon, so as to report the cases immediately if they prove to be positive. If, however, examination made after eight or ten hours proves negative we make no report until the next morning, inasmuch as it frequently happens that specimens which appear to be negative after eight hours incubation are positive when incubated for a longer time. The eight hour examination, however, enables us in many cases to notify the doctor of a positive case of diphtheria twelve hours earlier than would be otherwise possible.

We have used two different stains in routine for examination. One is the ordinary methylene blue, which has been used constantly since the inauguration of this Laboratory. During the last year we have been using a stain, the formula for which was given us by Dr. J. J. Kinyoun. The formula for this stain is as follows:

Formula for Kinyoun's bacteria stain:

Distilled water 500 c. c.
Toluidin Blue .5 gm.
Methylene Blue .1 gm.
Azur II .1 gm.
Acetic acid 5 c. c.

This stain acts promptly and stains the granules in diphtheria germs a purplish color, while the body of the rod is stained bluish as contrasted with the purple. The purple granules are usually quite evident, in considerable contrast to the blue background. Moreover, in some cases this stain enables us to differentiate the pseudo-bacillus from the true bacillus. As a rule, the pseudo-bacillus fails to show the purple stained granules, and in some cases we find organisms which by the ordinary Löffler's blue stain appear to be certainly of the apparent type of typical diphtheria organisms when stained with the new stain, fail to show the purple granules. Isolation and testing of these organisms has shown that at least in some cases the Kinyoun stain differentiates the true bacillus from the pseudo form. We are, therefore, convinced that for general routine it is more satisfactory than the older methylene blue, and have finally adopted the Kinyoun stain as a regular stain in our routine.

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TABLE VI. TYPHOID FEVER.

TYPHOID SPECIMENS.

	Positive	Negative	Doubtful	Total
1912-13	425	538	12	975
1913-14	221	471	24	716
Total,	646	1,009	36	1,691

No change in our method of examination has been adopted, nor has there been any change of outfits distributed to the physicians for specimens to be sent to this Laboratory. It has been our custom to send for a period of a few months each year return postal cards to physicians requesting reports as to the clinical aspects of the cases tested at the Laboratory, in order to learn how accurately the Laboratory tests agree with the clinical diagnosis. During the last two years the plan has been carried out as before, and the returns show that the agreement of the Laboratory test with the clinical diagnosis is about as it has been in previous years. While the agreement is fairly close, there is an error amounting to from five to ten per cent. In most cases the errors are those in which the Laboratory had given a negative result, but the doctor had reported a positive case. Some of those thus reported are doubtless cases of *para-typhoid;* but up to the present time we have not attempted to carry on parallel tests with the typhoid and the para-typhoid bacilli.

Two specimens of faeces and one specimen of urine have been submitted to the Laboratory for examination to determine whether typhoid bacilli were present. In one specimen of faeces typhoid organisms were found; the other specimen of faeces and that of urine were negative.

TABLE VII. MALARIA.

MALARIAL EXAMINATIONS.

	Positive	Negative	Uncertain	Total
1912-13	16	79	2	97
1913-14	14	78	1	93
Total,	30	157	3	190

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TABLE VIII. RABIES.

SPECIMENS EXAMINED FOR RABIES.

	Positive	Negative	Total
1912-13	3	11	14
1913-14	9	15	24
Total,	12	26	38

This shows a larger percentage of positive cases than we have found in any previous record.

The state has been quite free from rabies for the last two years, as is shown by the above table. A large part of the specimens referred to in this table are traceable to a single epidemic. A rabid dog was found running wild in the southwestern part of the State, and bit quite a large number of animals. So far as possible, these animals were either killed or placed in confinement, but a number of secondary cases of rabies appeared from the same vicinity within the next few weeks. In several instances human beings were bitten by animals that were proved to be rabid. But the detection that the animals in question were suffering from true rabies led to the adoption of the Pasteur treatment in these cases with sufficient promptness to ward off the development of the disease, and there have been no cases of human rabies.

There still seems to be a wide-spread impression that the proper thing to do as soon as the dog is suspected of suffering from this disease is to kill the animal at once and send the head to the laboratory. This is an unfortunate procedure because it sometimes makes it impossible to make a careful and reliable laboratory examination. The dog should be kept under observation for a day or two, and if it is a case of true rabies he will be sure to die within a very short time. If the dog does not die, but recovers its health, it is certain that it is not a case of real rabies. If the dog should die there is plenty of time to submit the head to the Laboratory for examination and still to have the report sufficiently prompt to enable the person bitten to obtain an efficient treatment by the Pasteur method. It is therefore again emphatically urged that cases of suspected rabies be not killed immediately, but kept under observation for a day or two. We have reason to think in one or two instances that the killing of the animal, at a stage too early in the disease, has rendered the findings of this Laboratory unreliable, negative results being obtained in cases where there seemed to be good reason for believing that true rabies was present.

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Our method of making the examination is the same that it was at the time of the last report. It is interesting to note that in one case, which was suspected of being an instance of *dumb* rabies, Nigri bodies were not found in the Ammon's horn, but were found in abundance in the cerebellum of the suspected animal.

TABLE IX. GLANDERS.

SERUM EXAMINED FOR GLANDERS.

	Positive	Negative	Uncertain	Total
1912-13	126	305	24	455
1913-14	118	145	22	285
Total,	244	450	46	740

In the examination of specimens sent to this Laboratory for glanders the Laboratory has been accustomed during the last two years to make an examination both by the fixation test and by the agglutination test. It has been found by extended examination that the agglutination test will give a positive test in some cases of acute glanders, where the fixation test would give a negative result, and on the other hand that the fixation test will give a positive result in some old, chronic cases, when the agglutination test pronounces them negative. By the use of the two tests together it is possible to detect practically every case of glanders, or at all events there is only a very small error. In our own experience we have found these two tests to be correct in nearly all cases. There have been a few instances of disagreement which will be mentioned later. The agglutination method adopted by this Laboratory is that recommended in the 27th Annual Report of the Bureau of Animal Industry, 1910, page 345. In our ordinary routine we are accustomed to test the serum sent with four different dilutions, 1-600, 1-800, 1-1200, and 1-1500. In case all four dilutions show an agglutination we pronounce the case as positive. Where only the two lower dilutions show agglutination we regard it as doubtful, or possibly suspicious.

In reporting the results of the fixation test for glanders we have adopted the plan adopted by Wasserman and others in reporting the Wasserman test for syphilis, indicating the completeness of the reaction by the varying number of plus signs. In the case the test is a perfect one, it is reported by

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four plus signs, ++++. If less perfect, by three plus signs, +++, and so on down to one, in which case the only verdict of slight suspicion can be rendered. In reporting the results in this way we have thought that it gives the veterinarian the best method of determining exactly what he is dealing with, assuming that he will understand that the completeness of the reaction will be read from the number of plus signs. Some veterinarians in the State have objected to this method of reporting, inasmuch as they prefer to have a positive statement, definitely indicating whether or not the horse in question is suffering from glanders. Beyond any question, it would be desirable to report distinctly a positive or a negative result in all cases. In most cases this is possible; but there is a moderate percentage of the cases in which there is a slight reaction, making it impossible to report the case negative, and at the same time too indefinite a reaction to warrant a positive report. In some of these cases when a second specimen is sent to us for confirmation, the result has been essentially identical with the first. In such cases there seems to be nothing to do except to report the case as one of doubt, and to allow the veterinarian to use his own judgment from clinical symptoms and from the ophthalmic test, which is now used somewhat widely in the State in determining whether to regard the case as glanders. It must be remembered that the fixation test is not absolute, and that there are certain factors connected with it that are not thoroughly undersood. Therefore really the only safe thing a Laboratory can do is to report exactly what the results of the test are, and allow the veterinarian, so far as possible, to interpret such tests in the best light of all present knowledge.

The agreement between the two methods of testing is shown by the following data. Of the specimens examined during the last two years there have been fourteen in which the two methods absolutely disagreed. In seven the agglutination test gave positive results while the fixation test gave negative results, and in seven the agglutination gave negative results when the fixation gave positive. There were nine in which the fixation gave a negative result, while the agglutination gave a positive result in a 1-1200 dilution, but not in 1-1500. There were, in addition to these disagreements, a large number of cases where the fixation test gave a weak positive reaction only, which we would have reported as ++ or +, while the agglutination giving a positive test in the dilution of 1-1500, enabled us defintely to pronounce the case as a positive case of glanders. The two together thus give reliable results.

We have had reason for believing that the method adopted

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by veterinarians for drawing the blood sent to this Laboratory for examination has not always been fully satisfactory, partly because sufficient care has not been used to guard against mixing the blood of one animal with that of another. The common method that is adopted is to use a hollow blood-letting needle, which is inserted into one of the veins of the animal to be tested. If such a needle is used upon a horse that has a strong positive case of glanders, giving a very positive reaction, and then the same needle is used without cleansing and without sterilizing, upon another animal that is not suffering from glanders, enough of the serum of the positive horse may be carried over into the second sample to affect the test. This may account for a number of slight reactions, which have been obtained in some cases, which, upon being retested, proved to be negative. This Laboratory has been careful to furnish for each specimen a sterile bottle, but has not furnished the blood-letting needles for the purpose of obtaining the specimen. Recognizing, however, this difficulty, and desirous of making our test as accurate as possible, the Laboratory now furnishes, with each outfit sent for a specimen of glanders, a needle for drawing the blood from the horse to be tested. This needle is sterilized and a clean needle can be used with each animal. This method, which we have hitherto adopted in obtaining samples of blood for syphilis, will hereafter be adopted in our glanders outfits.

Judging from the specimens sent to this Laboratory, glanders is not as common in the State as it was when our work began two years ago. At that time certain sections of the State seemed to be very considerably affected by it and large numbers of horses were condemned and slaughtered. The removal of these centers of infection has had apparently its good effect, and in parts of the State where there was at that time, large amount of glanders, the disease has become decidedly reduced.

In the work on glanders as well as rabies, this Laboratory has endeavored to work in co-operation with the State Cattle Commissioner. All of the positive reports upon glanders are sent to the Commissioner for his use in his control of the disease in the State. We also send to him the reports which we send out, of examinations of dogs suspected of suffering from rabies, in this case sending to the Commissioner all reports whether they are positive or negative.

THE WASSERMAN TEST FOR SYPHILIS.

With the beginning of October, 1913, this Laboratory announced that it would undertake the Wasserman test for

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syphilis for physicians in the State. It has not been customary for public laboratories to make this test free of expense to patients, but the wide spread of the disease and the difficulties connected with its satisfactory diagnosis has made it almost imperative that at least public hospitals should have the test at their command. It was believed also that if the Wasserman test were at the free disposal of physicians, early cases might be detected and contagion prevented as well as a possible cure effected in many cases. For these reasons, although the test involves a large amount of new work and necessitates considerable expense, the State Board, in 1913, authorized the Laboratory to make preparations for making the Wasserman test for syphilis. After some months of preparation the Laboratory found itself in a position to undertake this test, and upon the first of October, 1913, announced that it would make the Wasserman test about once in two weeks, testing at this time such samples as had been sent during the previous two weeks. This offer was thoroughly appreciated by some physicians, and especially so by the hospitals in the State, and specimens have been sent in constantly for this test during the past year. It had been feared that such a large amount of work of this type might be presented at the outset as to swamp the facilities of the Laboratory. This fear, however, proved groundless, for while the number of specimens has been constantly growing from the start, it has not come to a point where it is so extensive that the work cannot be very readily carried on by the Laboratory force as now organized. During the past year we have examined 562 specimens for syphilis, of which 166 have proved to be decidedly positive, 333 negative, and 63 have given a doubtful or a weak reaction. The considerable number of positive specimens that have been sent to us for examination show the real need for the test, and has justified the Board in authorizing this Laboratory to undertake it. As the number of specimens submitted for examination increases, it is expected that the frequency with which the test is made will increase as rapidly as the requirements demand. The technique followed in our Laboratory is given on a later page.

TABLE X.

SERUM SPECIMENS EXAMINED FOR SYPHILIS.

	Positive	Negative	Doubtful	Total
1913-14	166	333	63	562

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GONORRHEA.

Although the State Board has not regarded it as wise to undertake the routine examination of specimens for gonorrhea, this has been done in a few instances where request has been made for it. During the last two years two specimens have been examined, both of which proved to be positive.

EXAMINATION OF PUS.

Eleven specimens of pus have been submitted to the Laboratory for bacteriological examination for different purposes; in most cases this has been to determine the type of bacteria which was responsible for the formation of the pus, in order that the physician in charge may know what type of bacteria vaccine to use in combating the infection. Two specimens were submitted to be examined for diphtheria germs, both proving positive. Two were submitted to be examined for tubercle bacillus, both of which were negative.

RINGWORM.

Fifteen examinations have been made of school children to detect the presence of ringworm. A contagious scalp disease made its appearance in the schools of Middletown, and inasmuch as there was some difference of opinion on the part of physicians as to whether it was really ringworm, a number of the patients were brought to the Laboratory for examination, and eight were found to be suffering from a typical case of this disease.

SPINAL MENINGITIS.

Three specimens of spinal fluid were submitted to the Laboratory for examination for spinal meningitis. Of these, one was found to be positive, the others being negative.

EXAMINATIONS OF FAECES.

Five specimens of faeces have been sent to the Laboratory, two of them to be examined for typhoid bacilli and three for tuberculosis bacilli. One of the typhoid examinations proved to be positive, the other negative. All of the examinations for tubercle bacilli were negative.

EXAMINATIONS OF URINE.

Three specimens of urine have been examined, one for tubercle bacilli which proved to be negative, and the others for the presence of *Streptococci,* which were found present.

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EXAMINATIONS FOR PNEUMOCOCCI.

Four specimens of sputum have been examined for pneumococci. In three the pneumococcus organisms was found while the other specimen was negative.

THE DETAILS OF THE COMPLEMENT FIXATION TESTS.

Different laboratories that carry out the fixation tests vary considerably as to the routine by which these tests are applied. The routine which we have adopted in this Laboratory is almost precisely that used by the Health department of New York City, and we are indebted to Dr. A. McNiel for working out the details. For future reference it will be published here in some detail. It is as follows:

Quantities used. In all of our work we have adopted the plan of using quantities only 1-10 of that commonly recommended for the tests, using for the test .01 and .02 c. c. of the serum to be tested in the place of the ordinarily used .1 and .2 c. c. The chief purpose in using these small quantities is the saving in material, especially in guinea-pigs, which are not always easily obtainable in large numbers. There is also some saving in time by using smaller quantities. Lastly it is possible to make a large number of duplicates and controls without materially increasing the quantities of the various ingredients that are used. In order to use these small quantities, however, it is necessary to have specially prepared pipettes. For this purpose we use a pipette with a very fine bore, which holds .2 c. c. carefully graduated into 20 parts, each graduation being .01 c. c. These graduations are long enough so that the graduation of the .2 c. c. occupies in the pipette at least 8 inches or more on the pipette. By such careful graduation, and by having such a small bore, it is possible to measure out quantities no larger than .01 c. c. as accurately as ten times this quantity can be measured with the pipettes ordinarily used. It would be impossible to use these small quantities without these special pipettes, the ordinary pipete graduated to 1-100 c. c. being insufficiently accurate to give proper results.

Preparation of Ambocepter.—In preparing ambocepter we inject the five per cent red corpuscles of a sheep into the lateral vein of the ear of the rabbit, using a hypodermic syringe for the purpose. These corpuscles must be carefully washed by centrifuging so as to remove every trace of serum, for a trace of serum would develop coagulins or anti-complementary bodies which would interfere with the test, and might even give a fixation of complement. The cells should be as fresh

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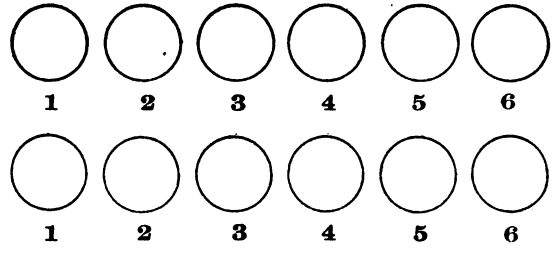
and as sterile as possible. Four or sometimes five injections are made every second day, 2 c. c. on the first day, 3 c. c. on the third, 4 c. c. two days later, and 5 c. c. on the seventh day. In some cases another injection is made later still. Nine days after the last injection the rabbit is killed, the blood is carefully drawn, and the serum is separated from it in the ordinary method, a centrifuge being used to clear the serum of red corpuscles if necessary. After the collection of the serum it is inactivated by exposure to 56° C. for a half hour. This is the ambocepter, which is then ready for titration.

The titration of the material is, however, an extremely important factor. For titrating new ambocepter we proceed as follows: We make a dilution of inactivated serum in the proportions of 1 to 500 or normal salt solution (i. e. 8.5 gm. to the liter) to get a rough idea of the desired dilution. For this and the other titrations which are mentioned below we arrange small test tubes (diameter ½ inch) in two rows, in small copper test tube racks holding twelve tubes in all, shown diagramatically as follows. In the following pages one row of these will be referred to as the upper and the other as the lower row. The different ingredients are placed in the tubes by the special pipettes in the order mentioned below.



Upper Row	Tube 1	2	3	4	5	6
Diluted ambocepter	.04	.03	.02	.01	..	.0
10% Complement	.1	.1	.1	.1	..	.1
5% Suspension of red cells	.1	.1	.1	.1	..	.1
Lower Row						
Diluted ambocepter	.1	.09	.08	.07	.06	.05
10% Complement	.1	.1	.1	.1	.1	.1
Red cells	.1	.1	.1	.1	.1	.1

We equalize the quantities in the tubes by adding three drops of saline to front row and four drops to the back row, and the rack with tubes is then placed in a water bath at 37.5° C. for one hour, by which time, haemolysis is complete. If complete haemolysis occurs in the tubes containing .05 of the ambocepter but not in lower dilutions, the dilution of the

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original ambocepter, 1 to 500, is correct. If, however, the tube with .04 should show haemolysis, the dilution of 1 to 600 must be used. If the tube containing only .01 shows haemolysis, it indicates that the ambocepter is too strong, and the titration must be repeated with a higher dilution. In this case the ambocepter should be diluted with 1 to 1,000 parts of salt solution and titrated. We find it more convenient to use a dilution that haemolyzes with .04 c.c. of ambocepter and by one or two tests determine this dilution. After determining the proper dilution the titration should be repeated for control with small amounts of normal human serum, in this case using a double titration, to on set of tubes adding .01 and to the other .02 of normal serum.

If the dilution has been correct the tube which contains .04 should show complete haemolysis, and if this is found to be the result the whole quantity of the ambocepter may be preserved for future use, properly labeled with the proper amount of dilution required.

Preservation.—This ambocepter may be kept for a long time without deteriorating in strength. We have used two methods of preservation. The first is by placing it in small vials and adding to it .5% of carbolic acid. A second method has been to make glass bulbs with a long capillary neck, filling them part full of the ambocepter, and sealing the tubes in a flame, after which they are sterilized by heating for half an hour at 56 degrees on three successive days. These vials are then placed in an ice chest and will remain unchanged for a long period. Our experience has shown that the ambocepter will not lose its strength for some months, but it is necessary to titrate it each day that it is used in order that one may be sure that the strength of the particular lot used has not been changed, and thus vitiate the result.

Preparation of Syphilis antigen.—We wash and cut up guina-pigs' hearts, putting the minced material into absolute alcohol, using about 5 c. c. of alcohol to each heart. In practice, we put into a closely stoppered bottle a quantity of alcohol, and then add to it the hearts of our guinea-pigs until a considerable quantity of the material is thus prepared. This is kept about two months in an ice chest, and then put into an incubator for about three days. The material is then filtered through filter paper, and constitutes the antigen which must now be carefully titrated.

Titration of new antigen.—To start with, trial dilutions in saline are made with a strength of 1 to 10, 1 to 20, and 1 to 30. These dilutions are made very slowly, as follows: Into a convenient bottle there is placed 3 c. c. of the antigen. Then 3 c. c. of saline is added, drop by drop, the mixture being care-

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fully shaken after each addition. After this another 3 c. c. may be added 3 drops at a time; after which the saline may be added 5 drops at a time. When the bulk reaches 10 c. c., we add the rest of the saline 1 c. c. at a time until the final desired dilution has been reached.

The clear solutions are then titrated with a strong 4 plus serum as follows.

Twelve tubes are placed in a rack as above described, and treated as follows:

Upper Row	1	2	3	4	5	6	
Diluted antigen	.4	.3	.2	.1	.05	.2	serum
10% Complement	.1	.1	.1	.1	.1	.1	
Lower Row							
Positive serum	.01	.01	.01	.01	.01	.01	
Diluted antigen	.25	.2	.15	.1	.05	.025	
10% Complement	.1	.1	.1	.1	.1	.1	

Equalize with saline and fix one-half hour in water bath or in a 37° incubator for one hour.

We add to each of the above .2 c. c. of sensitized blood cells (or the amount which the day's titration of ambocepter shows to be proper; see below).

The material is placed in a water bath for one hour, and then the result is read. In case any of the three dilutions above chosen is correct, it will be found that in the test with that dilution all of the tubes in the lower row will show complete fixation (total absence of haemolysis) or all except the two at the right hand end, containing .05 and .025. In the upper row either no fixation should occur or a slight fixation may be shown in the tube containing .4 c. c., and all of the other tubes in the lower row should be completely fixed, i. e., showing no haemolysis. If one of the three dilutions above prepared shows a fixation such as thus described, that is taken as a proper dilution for this particular lot of antigen. If this titration shows that the antigen is so strong that even a dilution of 1-30 gives fixation in the two right hand lower tubes, a higher dilution is made until a dilution is reached that gives practically the results above described. In making this titration, if the dilution is too great there will not be a proper fixation in the lower row or tubes; if the dilution is too low, there will be a lack of haemolysis in the upper row of tubes. When proper dilution is decided, the antigen is stored away without dilution in vials, which are carefully labeled with the proper dilution to be employed when the antigen is used for the routine test. The proper dilution is two units or twice the amount of antigen which the titration has shown to

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give complete fixation. This antigen may be kept in an ice chest for a long time without losing its strength; but after a while its power gradually declines. Inasmuch, however, as the antigen is to be titrated anew each time it is used, the decline in strength is quickly detected, and any antigen that has lost its power may be thrown away.

DAILY ROUTINE.

Red Cells.—It is our custom to prepare the red corpuscles of the sheep the day before the test is made. About 100 c. c. of blood drawn from the jugular vein shaken with beads and filtered through cheese-cloth, and placed in graduated centrifuge tubes, and centrifuged for about ten minutes. The serum collecting at the surface is pipetted off, and is replaced with normal salt solution. The contents are thoroughly mixed and again centrifuged for ten minutes, the clear liquid again pipetted off and tubes again filled with salt solution. This is repeated about four times, until the red cells have collected at the bottom as a fairly solid precipitate. The quantity of corpuscles left at the bottom of the tube may be directly read from the graduation on the tubes. The saline solution is once more pipetted carefully from the corpuscles, and there is then added fresh saline solution in amount to make a five per cent. solution of the corpuscles. This final solution, after mixing, is placed in a wide mouthed bottle, plugged with cotton, and put in the ice chest over night. It should show no haemolysis, and the corpuscles upon standing should settle, leaving a colorless liquid. If the liquid is red it shows that haemolysis has occurred and another lot of sheep's blood must be washed.

Complement.—We commonly kill guinea-pigs with a blow on the head by a bit of rubber hose. The pig is bled into a petri dish by cutting the carotids and jugulars. The petri dish is placed, slightly sloping, in an ice chest over night, and the serum which separates from the clot is freed from corpuscles by centrifuging and is placed in a clean bottle, and is there mixed with a quantity of saline solution to give a ten per cent. solution, which is the basal material used in all the subsequent tests. The solution of the complement is usually made the first thing in the morning on which the test is to be made, and the material prepared may be kept in an ice chest and used for a period of twenty-four to thirty-six hours without deterioration.

Titration of ambocepter.—The first step on the day of the test is to titrate the ambocepter against the day's lot of complement, to determine the proper unit for haemolysis. A quantity of the preserved ambocepter, sufficient for the day's

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tests, is mixed with saline sufficient to give a dilution which previous titration has shown to be the right one. It is then titrated with the day's lot of complement exactly as described on page 137. Since the complement varies slightly in strength with different guinea-pigs the results on different days do not always agree and the amount of ambocepter will vary with the strength of the complement. To determine this amount is the purpose of this daily titration.

Ambocepter, red cells, and complement are mixed and the rack of tubes is placed in a water bath for one hour. The results are read and there is taken for the unit in subsequent work three times the amount of ambocepter which is shown to be required to produce the complete haemolysis, fractions, however, being disregarded. For example, if it is found that the tube containing .06 gives haemolysis the unit to be used would be three times .06, which is .18, the unit in this case being .2. If the tube with .05 shows complete haemolysis, the unit to be taken is three times .05, which is .15, the unit in this case being .15. If the haemolysis is shown only in tubes showing .07 the unit would be three times .07, which is .21, in which case the final unit used would be .2. The unit thus obtained indicates the amount of the ambocepter which must be used in the final test.

Sensitizing Red Cells.—After determining this unit by titration the proper quantity of the diluted ambocepter is added to the five per cent. solution of washed red cells, a sufficient quantity of the mixture being prepared to furnish enough for all the tests to be made during the day. In this addition the ambocepter is to be added to the red cells, and not the reverse. The mixture may be used after standing for a few moments, and may be satisfactorily used during the rest of the day.

Since in the final test we wish to add an amount of this mixture sufficient to give 1 c. c. of the red cells solution, and which shall also give a proper amount of ambocepter, it is necessary to make a little calculation in each case to determine the amount of ambocepter which must be added to the red cells. This calculation is made as follows:

If the ambocepter titration gives .05, the unit as above indicated is .15. This means that there should be 1.5 parts of ambocepter to each 1 part of red cells. If, therefore, we mix 1.5 parts of ambocepter to 1 part of red cells we shall get the proper proportion, and then in the final test we add .25 c. c. of the mixture, adding thus .1 c. c. red cells,, and .15 c. c. parts of ambocepter.

If the titration should give .07 the calculation would be as follows: .07 times 3 equals .21. Discarding the fraction, the unit is .2, meaning that two parts of ambocepter must be

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added to one part of red cells. The diluted ambocepter is therefore mixed with the 5% red cells in proportion of 2 to 1, and then in the final test .3 c. c. of the mixture added to the test tubes would give .2 c. c. of ambocepter to .1 c. c. of red cells. In the same way calculation must be made for each day according to the titration of the ambocepter, care being taken in all cases to mix the red cells and ambocepter in the proportions shown to be demanded by the titration of the day, and in the final test care being taken to use an amount of the mixture which will give one part of red cells and the proper amount of ambocepter as shown by the titration of the day. The best titre for the ambocepter is that which gives complete haemolysis with .05 of the diluted ambocepter, resulting in the use of a unit of 1.5, although other titrations may be satisfactorily used.

Titration of Antigen—The next step in the process is to titrate the antigen to be used for the day's test. The antigen from the stock which has been in the cold box is diluted to what has previously been found to be the desired amount, the dilution taking place slowly, by the addition of saline solution to the antigen drop by drop, as already described. The titration is then made exactly as described on page 139, up to the point of fixation. After the fixation of an hour in the incubating oven there is added to each of the twelve test tubes the proper amount of sensitized red cells, the amount to be added to each test tube being determined by the method given above, under the head of "sensitizing red cells." As shown there, we prefer to have the quantity added .25 c. c. rather than a larger quantity. After thoroughly mixing the sensitized cells with the other ingredients test tubes are placed in a water bath for half an hour, or until the haemolysis is complete. In this titration the upper row should all haemolyze, inasmuch as there is no positive serum to fix the antigen. Sometimes, however, faint fixation is shown in the tube containing .4 c. c., indicating that this antigen alone in this quantity has a slight power of fixation, or is slightly anti-complementary. After determining definitely where the point of fixation is, we use for a titre in the final test the amount contained in the tube next above that which is needed to prevent haemolysis, as shown by the lower row, provided this amount, as shown in the upper row, is not sufficient in itself to prevent haemolysis, that is, not anti-complementary. For example, if the tube containing .05 c. c. of the antigen prevents haemolysis, the final titre is .1, provided, as is shown in the upper row, this amount, .1 of antigen alone, is not anti-complementary. If, as shown by the lower row it requires .15 c. c. of the antigen to prevent haemolysis, the

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final titre is .3 provided, as is shown by the upper row, .3 c. c. of the antigen alone does not prevent haemolysis. Where the titration comes out satisfactorily it is commonly found that .05 c. c. or .04 c. c. is sufficient to prevent haemolysis and this titre is regarded as the most satisfactory. It is best not to use an antigen which fixes above .2 c. c. or less than .05 c. c.

As a rule, when the test works in a satisfactory fashion it is found that we obtain nearly the same titration for the ambocepter and for the antigen each day. Inasmuch, however, as these ingredients sometimes quickly lose their powers, it is desirable to make this titration each day when the test is made, to confirm the results, and when this is done and proper results are obtained, the final conclusion of the test is far more reliable than when one depends for any day on the titration made on a previous day. In actual experience, however, we find that the titration runs along about the same for weeks at a time. There is, however, more or less of a variation in the titration of the ambocepter with the complement, because the complement in different guinea-pigs has different strength and as a result there is a modification of the ambocepter titration. The ambocepter titration as above given is thus really a combination titration of the ambocepter and the complement of the day. The antigen, however, remains usually about the same for a long period of time.

The Final Test.—Having determined the day's titre of the ambocepter and the antigen, the final test is made as follows: For each test six test tubes are used, and thus each of the test tube racks will serve for two different tests. The following scheme shows the use of six of these tubes, the six on the right being one test and the six on the left another test.

Upper Row	1	2	3	
Serum to be tested	.02	.04	.01	
Antigen, diluted..	..	..	.1	or the amount called for by the titration
10% Complement	.1	.1	.1	
Equalize with saline.				
Lower Row				
Serum to be tested	.02	.01.	02	
Antigen	.1	.1	.1	or the amount called for by the titration
10% Complement	.1	.1	.1	
Equalize with saline.				

This constitutes a single test. The six tubes in the right hand side of the rack are used in the same way with a second sample of serum to be tested.

The two left hand test tubes in the upper row serve as a control inasmuch as they contain no antigen, and they will tell whether the amount of serum there used is sufficient in itself to prevent haemolysis. If these tubes prevent haemolysis, it shows that the serum has become anti-complementary,

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and the test is therefore unreliable. Of the four other tubes, it will be seen that numbers 1 and 3 on the lower row are duplicates, and numbers 2 on the lower and 3 in the upper row are duplicates. The purpose of this is that one may check the other, and therefore that any error in manipulation may be detected.

After adding the serum to be tested, the antigen and the complement as above indicated is added, and equalizing with saline, the test tube rack is placed in the ice chest for four hours for fixation. After this there is added to each one of the tubes the amount of sensitized red cells that have been determined by the above calculation to be needed for the titration of the present day. After shaking to thoroughly mix, the test tube racks are then placed in the water bath at 38 degrees and the results are read just as soon as the two controls in the upper row are haemolyzed. This sometimes occurs in a very few minutes, sometimes it takes ten to fifteen minutes, sometimes longer; but usually inside of fifteen minutes the reaction is complete and the final reading can be made.

Final Reading.—In the case of a negative serum all six of the tubes haemolyze completely and promptly. With a positive serum tubes 1 and 2 in the upper row should promptly haemolyze, while the other four tubes should show complete fixation. Such a case is reported at ++++.

If tubes number 1 and 3 in the lower row show complete fixation and number 2 in the lower row and 4 in the upper row partial fixation it is reported as +++.

If tubes number 1 and 3 of the lower row have complete fixation and tubes number 2 in the lower and 3 in the upper row show complete haemolysis it is reported as ++.

If tubes 1 and 3 in the lower row show a partial fixation and 2 in the lower and 3 in the upper show complete haemolysis it is reported as +.

If only a slight fixation is shown in any of the tubes it is reported as a ±.

If all tubes haemolyze it is reported as *negative.*

If all tubes, including the controls in the upper line, show fixation it is reported as anti-complementary and therefore of no value.

If tubes 1 and 3 in the lower line do not agree, or if tubes 2 in the lower line and 3 in the upper line do not agree, it shows some error in the routine, and requires a repetition until the reason for the error can be determined.

Reporting Results.—In reporting the results to the physician we are accustomed to report them by plus signs; ++++ meaning strong positive, and the other reports meaning a greater or less suspicion, according to the number of plus

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signs that may be indicated. A single plus sign is not regarded as a very strong indication of syphilis, while +++ would be almost sure, though not so definitely a case of syphilis as ++++. A ± sign has no meaning except to show that the test should be repeated.

With the preliminary daily titration of ambocepter and antigen, and with four tests made with each serum sample as well as two controls, the test as above made is so accurately guarded that the chance of error is very slight and the results are to be very thoroughly relied upon as correct.

PREPARATION OF GLANDERS ANTIGEN.

We prepare glycerine agar, made of the usual beef broth with 1% peptone and 5% glycerine, and an acidity of .2%. This we place in large flat bottles, in a slanted condition, so as to give a large surface. Upon this is inoculated the glanders bacillus, and the cultures are allowed to grow for eighteen to twenty-four hours, or longer if necessary to produce a good growth. The surface growth from the agar is then washed off with a small quantity of distilled water, about 10 c. c., using a bent glass road to detach it from the agar. This material is then heated in the water bath at 80° C. for a whole day. It is placed in an ice box over night, heated again to 80° and then filtered. In filtering it is first passed through a Buchner filter, asbestos fiber being used for a filtering material. The filtrate is then passed through a small Chamberland filter under vacuum pressure. The clear filtrate finally obtained is heated to 56°c. for fifteen minutes on three successive days, for sterilization. It is stored in bottles with a paraffine layer at the top and may be kept for a long time When ready for use, a 10% solution of saline is added, and the material is titrated. In titrating the new antigen it is first diluted 1 to 25, and titrated in the ordinary way. (See page 139.) If this is a proper dilution a faint haemolysis should be shown in the tube containing .4 in the upper row, and the lower row should all show fixation except the one or two on the right hand end. If the titration shows that the dilution is not sufficient higher dilutions are used, until one is obtained that gives a titration such as above described. For the final unit is chosen that of the next higher tube than that required to prevent complete haemolysis, provided this alone is not anti-complementary, as is shown by the tubes in the upper row in the fixation. The method is identical with that shown in the titration of the syphilis antigen.

Antigen made in this fashion has considerable variation in its titre, but sometimes it is very strong. After having determined the titre by careful titration, the antigen can be pre-

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served for a considerable time without deterioration. In some cases we have preserved it with a little carbolic acid; in other cases we have placed it in sealed tubes, and after sterilizing on three days at a temperature of 80° C., have kept the tubes in an ice chest till wanted. The antigen retains its strength for a long period and enough can be made in one batch to last for many weeks or in our own case, where the number of tests is not very great, for several months.

In the fixation of the antigen for glanders we commonly use one hour in an incubating oven at 37.5° C. If the ice chest method is used it requires twelve hours fixation instead of four hours as in the case of syphilis.

We have planned during this year to make the fixation test about once in two weeks, upon the first and third Thursday in each month. If the number of specimens increases it is expected that it will be necessary to make the test more frequently. Indeed, during the last few months, the number of specimens examined has been so great that we have been obliged to make the test occasionally once a week instead of once in two weeks. Doubtless it will not be long before this test will have to be made at least once a week if not oftener.

CONTAGIOUS ABORTION OF CATTLE.

During the last year requests have come to this Laboratory for the examination of cattle to detect the presence of contagious abortion. The method of making this test is by the fixation method, practically identical with that applied in glanders. A contagious abortion antigen is made by methods almost identical with those described above for making the antigen for glanders. The bacillus of contagious abortion does not grow upon glycerine agar as readily as the glanders bacillus, and it takes a long time to obtain a sufficient growth to obtain a proper antigen; but by a little patience and leaving the cultures to grow for two weeks, a quantity can be obtained which enables us to get an antigen which is fairly strong.

The use of antigen and the application of the test is dependent upon the same principles as described above. Experience has, however, seemed to indicate that the exact routine which we follow in the Wasserman test cannot be successfully followed here since it seems to give positive results in some animals that do not subsequently show clinical signs of abortion. The routine method of reading the results in these cases is modified by allowing the final tests to remain in an incubator at 37° C., for two hours and only calling positive those that fail to haemolyze at the end of this time. If the tests are read at the time that the controls show complete

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haemolysis many cases appear positive that do not subsequently abort. Just what interpretation should be placed upon these cases is yet uncertain.

We have undertaken this test only for a short period and it is impossible to say whether there will be any further demand for it. Up to the present time we have tested forty-eight specimens of serum of which forty-three gave positive results when read at the time of complete haemolysis of the control. How many of them retained the fixation for two hours, unfortunately, we did not determine, since it has only recently been determined that our ordinary routine method is too delicate for this abortion test.

MILK EXAMINATIONS.

The total number of examinations of milk during the period covered by this report has been 7,957. These samples have come from all over the State, large numbers from the larger cities and smaller numbers from the small towns. A few of the cities in the State have their own laboratories where all milk examinations are made, only a few milk specimens being received in this Laboratory from Hartford, New Haven, Bridgeport, Waterbury, Greenwich, or New Britain. One or two other cities have also recently established laboratories of their own. The establishment of such laboratories and the continuous appointment of milk inspectors in larger numbers of the smaller towns, indicates the amount of interest that has developed in the subject of the public milk supply since this Laboratory has undertaken the work. The last five years has seen a growth of the appreciation of the fact that the public milk supply is really one of the largest factors of the danger to public health. That *tuberculosis, scarlet fever, diphtheria,* and *intestinal troubles* have been attributed to the bacteria in milk has been known for quite a number of years. Recent years, however, have shown that serious epidemics of *infectious sore throat* are traceable directly to improper milk, and the suspicion is abroad that not a few cases of other forms of sore throat of more or less seriousness are attributable to this cause. These facts have been more and more recognized by health officials and they have been gradually becoming appreciated by the public, so that there has been spreading widely over the country a growing demand for a proper control of the milk supply, not only from the standpoint of its fat content and the possibility of adulteration, but also from the standpoint of its bacteriological content, which properly interpreted is a measure of the care, cleanliness, and carefulness in the handling and distribution of the milk, factors of utmost importance in the public health problem. As

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the result of this growing appreciation there is a stronger and stronger demand for a proper control over the milk supplies on the part of health officials.

On the other hand there is some evidence that an improper and too rigid application of excessive rules connected with dairying, defeats its own end. The increased cost of labor and food for cattle has made the profit in the dairying industry a constantly declining one for a number of years, until the dairymen insist that they have reached the point where it is no longer profitable to raise and sell milk to the public at prices that they can obtain for the same. Under these conditions any increased expense which is placed by health officials around the production of milk has a tendency not so much to improve the character of the milk as to drive the milkmen out of the business; and this is certainly a factor that is greatly to be deplored. The agitation for a pure milk supply that has been prominent in the last ten years has developed a large number of rules and regulations which, when applied to dairying conditions, will undoubtedly greatly increase the value and reliability of the product, and public health officials in various places have used different methods of enforcing these various regulations, naturally with varying success. Sometimes they have been more rigid than the industry will bear. There certainly appears at the present time to be a reaction against some of these extreme and, as many think, unnecessary regulations which only involve expense and do not greatly improve the product of the dairy. Our bacteriological and dairy experts are at the present time working upon the practical problem of discovering what simple, inexpensive means can be employed to improve the product without greatly increasing the price of production; in other words, to separate between the essentials and the non-essentials in dairy improvements. Success has been reached in these lines, so that it is quite possible, by the adoption of a few simple things, to increase emphatically the purity and the safety of the milk without materially increasing the expense of production, and at the present time the dairy regulations may be divided into the essentials and the non-essentials. If dairymen will follow the few essentials they will produce a satisfactory milk, and will increase its purity without following out the numerous non-essential and more expensive rules.

But while there is to-day considerable difference of opinion on the part of authorities as to what dairy conditions can practically be enforced, there is no difference of opinion concerning the fact that milk should have a legal standard, should not be watered or otherwise adulterated, should be

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clean, should not be so old as to be partially decomposed before it reaches the consumer, and should be free from pathogenic organisms. The tests carried out upon the samples of milk received in this Laboratory are designed to meet these conditions and requirements.

THE PURPOSE OF MILK ANALYSES.

It may be desirable here once more to indicate in a word the purpose of our Laboratory examinations of milk. The primary object of milk examinations of this Laboratory is not to detect and prosecute the few people in the State that adulterate or skim their milk. That this is desirable and necessary is not, of course, questioned, and to detect such fraudulent samples is naturally one of the purposes of all milk analyses. But our chief purpose is a different one. While there are a few dishonest dairymen in the State who will water or skim milk, there are large numbers of others who, while they would not descend to such practices, would be somewhat careless in their method of handling milk, especially if they feel that such carelessness will never be recognized, and that there will be no one who will detect whether or not they have been careful or slovenly in their handling of the milk. This was clearly true before the Laboratory undertook a State examination of the milk. Up to that time there had been no one in the vicinity of the smaller towns, nor even in most of the larger one, who paid any attention whatsoever to the quality of the milk that was sold in the market, unless it chanced to be noticeably sour or spoiled in some other way. A slight examination showed that the milk sold in the different towns of the State was in the widest degree variable, with a fat content ranging from two per cent. to twelve per cent., with an amount of dirt sometimes excessive, sometimes very slight, and with every other factor pointing to the widest variation. The reason for this was largely the fact that there was no one who paid any attention to milk quality, and it is a matter of human nature that even the honest man becomes careless if he knows that his carelessness is never to be discovered and indeed never can be discovered. The purpose of establishing the work of this Laboratory upon milk was to obtain, if possible, a partial control over the large amount of milk that is sold in the State by the honest, but careless, dealers and reduce, if possible, the carelessness which had found its way into dairy methods. It was believed that if the milk dealers knew that the Health Officers in town had a knowledge of the milk they were producing, and that their milk was likely to be sampled at any time, the result

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would be an increase in care even among the honest dealers. The purpose of our work, then, has been not primarily to catch the dishonest, but to increase the care with which the reputable honest dealers handle this product, which while extremely valuable is also very liable to contamination with dangerous disease germs.

Results.—The results of the work undertaken here has reached, and even surpassed, our hopes. As would be expected, success has varied very much in varying parts of the state, the value of the work depending upon the local health officer or the local milk inspector. Where the milk inspector is interested in the work and is careful to keep in close contact with his dairyman, and explain the meaning of the reports from the Laboratory, the results have been uniformly satisfactory, and there has been a noticeable improvement in the character of the milk without any appreciable increase in the cost of its production. Where the Health Officers or milk inspectors have taken the matter up in a purely perfunctory way, simply for the purpose of doing a little work and to earn a small salary, the results of the work of our Laboratory have been practically nothing. In general, however, there has been a manifest improvement in the quality of the milk since this Laboratory has undertaken its examination. This increase in quality is shown in a greater uniformity of product, in a smaller number of samples which show skimming, and especially a smaller number that show improper mixing, and markedly in the decline in bacteria content, which has been seen in practically every locality where our work has been carried out. This decline in the number of bacteria in the milk has only one meaning. It means greater care in milk production, milk handling, and milk distribution. It is impossible to produce a milk with a low bacterial content without exercising sufficient care in its production and distribution. It is true that the presence of large numbers of bacteria does not necessarily indicate that the milk is dangerous, but the presence of small numbers does indicate that the milk has been produced under good conditions and is therefore, in all probability, safe and useful as a food product. In some places in the State, where milk inspectors have been especially efficient and active there has been produced a condition that will probably not be surpassed in any other State in the Union. One of the towns, at all events, continues to produce milk year after year, summer months and all, where the bacteria are rarely over 10,000 and usually under 5,000 the year round, and where in other respects the quality is absolutely ideal. This has been done by the efficiency of the milk inspectors, aided by our Laboratory reports.

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Fat Content.—In one respect the report given below is hardly satisfactory. It will be noticed that there is quite a large number of cases of milk with the fat content below the legal standard, 320 being found during the last two years. Some of these are probably due to fraudulent skimming, some are undoubtedly due to improper mixtures, resulting from lack of thorough care in selecting the sample; but there can be little doubt that a considerable proportion of the large number of low fat contents is due to one peculiar result of the statutes in force in this State. The legal percentage of fat in Connecticut is 3.25%, and with this rather low grade declared by the state as legal there is no inducement for any dealer to produce a grade of milk with a higher fat content. Moreover, the increased cost of food and labor has made the expense of producing milk a constantly growing one, until the profits which the dairyman can reap have become very small, and some have insisted that they have vanished entirely. Under these conditions it is natural that the dairyman should attempt to furnish at as low an expense as possible the largest quantity of milk which will pass the legal standard. It is well known that the Holstein breed of cattle produces large *quantities* of milk but of a low fat grade. Under the pressure of increased cost of production uncompensated for by an increased price, the dairymen have been replacing their older breed of cows, which produced a milk with a higher degree of fat, by the Holstein type that can produce a larger number of quarts of milk of a lower grade. Provided the Holstein milk reaches the legal standard of 3.25% nothing, of course, can be said legally against this practice, and the inevitable result of it is a constant increase of the number of Holstein cattle relative to other breeds of cattle that produce milk of a higher fat content. While Holstein cattle do, as a rule, produce milk that will reach the legal standard of 3.25%, some animals, in a herd of Holsteins, produce milk that is even below this in fat content, and it sometimes chances that a herd will have a number of these cattle, the result being a tendency to reduce the fat contents of their mixed milk. Under these conditions any variation in perfection of a mixture from a herd of cattle will be sure to produce some samples that are below the legal standard in fat. Holstein milk taken directly from the cow may show a fat content below 3.25%, and if Holstein milk from a herd which has a milk content of a trifle over this legal standard is allowed to stand for a little while so that the cream may rise to a slight extent, it will almost inevitably happen that the milk from the bottom of such a can will have a fat content below the legal standard. Under these circum-

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stances, in the exigencies of haste in the dairy and milk distributing station, it not infrequently happens that samples of milk are offered for sale with the fat contents below the legal standard of 3.25%. No intentional fraud can be charged in this case, nor is there any considerable amount of carelessness chargeable to the people handling the milk. But with the general tendency to produce a milk which is only slightly above the legal standard, it will inevitably happen that with ordinary care, with no apparent carelessness and no attempt at fraud, samples will not infrequently reach the market which fall below the legal standard. This result has been long anticipated, because when the legal standard for fat was placed at 3.25% it was first strongly argued that the result would be a general tendency to reduce the fat content of the milk offered for sale on the market down to this low limit. There is no question whatsoever that in the last years there has been a marked tendency in the market milk to approach this low legal standard, and that, as a consequence, the general grade of milk now sold on our market is, so far as concerns its fat content, lower than it was a number of years ago, when a larger proportion of cattle in the State were breeds that produced a higher percentage of fat. It is inevitable that this would be the result, and we may look for a further continuation along the same lines unless some means can be devised by which milk can be sold by a quality standard rather than simply one of quantity. In defense of this general tendency to use Holstein cattle, it is claimed that experiments have shown that milk which is not rich in fat is even more healthful for general use than the richer milk of Guernsey and Jersey cattles. Experiments have certainly shown that animals thrive better on milk that is not too rich in fat, and that Holstein milk, from this standpoint, is as wholesome, if not more wholesome, than the milk with a higher per cent. of fat. While this is probably true, the public is generally partial to a higher per cent. of fat, and many complaints are arising at the present time over the state concerning the poor quality of the milk that is now furnished by the public milk companies. With a legal statute requiring only 3.25% on our statute books there is no way of meeting this complaint except by stating that such milk actually does come up to the legal standard, and keeping watch over the distributors, so that they do not often fall below this standard. The frequency with which milk samples below the legal standard reach the market is indicated by the large number of illegal samples which have reached this Laboratory for examination, and that there is a real danger that the public will be defrauded by this means will be clear when it is recognized that in

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most cases these illegal samples come from reputable milk dealers who are doing their best to produce a legal milk from Holstein cows.

GRADING OF MILK.

It has become evident in the last two years that no satisfactory solution of the milk problem will be reached until in some way it is possible for milk to be graded according to its quality and be sold according to its grade. As long as no attempt is made to indicate quality in the product sold and anything that can reach a low chemical standpoint can pass as milk and be sold at the same price, the stimulus placed upon the milk producer is not to produce *quality* but *quantity,* and to produce it at the lowest possible price. The difficulty, however, of devising a satisfactory method of grading milk which will enable it to be sold upon its quality, has been extremely great, and has as yet only in part been overcome. For several years a National Commission of Milk Standards has been studying the subject, and as the result of long deliberations they have devised a plan by which the milk can be divided into at least three grades, A, B, and C. The grading of the milk by this Commission is based upon bacteriological and dairy scores. The difference between the three grades as established by this commission is as follows:

Grade A Milk, Raw.—This milk shall come from cows free from disease as determined by tuberculin tests and physical examinations by a qualified veterinarian, and shall be produced and handled by employees free from disease, as determined by medical inspection of a qualified physician, under sanitary conditions such that the bacteria count shall not exceed 100,000 per c. c. at the time of delivery to the consumer. It is recommended that dairies, from which this supply is obtain, shall score at least 80 on the U. S. Bureau of Animal Industry score card.

Grade A Milk, Pasteurized.—Milk of this class shall come from cows free from disease, as determined by physical examination by a qualified veterinarian, and shall be produced and handled under sanitary conditions such that the bacteria count at no time exceeds 200,000 per c. c. All milk of this class shall be pasteurized under official supervision and the bacteria shall not exceed 10,000 per c. c. at the time of delivery to the consumer. It is recommended that dairies, from which this supply is obtained, should score 65 on the U. S. Bureau of Animal Industry score card.

Grade B Milk.—Milk of this class shall come from cows free from disease as determined by physical examinations, of

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which one each year shall be by a qualified veterinarian, and shall be produced and handled under sanitary conditions such that the bacteria count at no time exceeds 1,000,000 per c. c. All milk of this class shall be pasteurized under official inspection, and the bacteria count shall not exceed 50,000 per c. c., when delivered to the consumer.

Grade C Milk.—Milk of this class shall come from cows free from disease as determined by physical examinations and shall include all milk that is produced under conditions such that the bacteria is in excess of 1,000,000 per c. c. All milk of this class shall be pasteurized, or heated to a higher temperature, and shall contain less than 50,000 bacteria per c. c. when delivered to the customer. It is recommended that this milk be used for cooking or manufacturing purposes only.

The value of such grades of milk as these has been generally recognized, and already there are signs in many places that the adoption of the grading system is to be the method used in the near future for controlling the milk supply. The grades established by the Commission have already been endorsed and recommended by the American Public Health Association, the National Milk Dealers' Association, the National Milk Producers' Association, and the American Medical Association. The endorsement of the grading system by societies, however, is only the beginning, since the real step must be taken by the municipalities that enforce the law. Not until the cities and towns adopt grades and enforce them can the work of grading milk be practically accomplished. A few cities, notably New York, have already successfully adopted this system of grading with slight modifications.

It will be understood that the primary purpose of these milk grades is the matter of health, since they are designed to place upon the market grades of milk fit for use. One difficulty in applying them has been the very great difference in the ease with which standards may be reached in different localities. In the larger cities like New York it is difficult to obtain unpasteurized milk that, under any circumstances reaches Grade A, while in a small community close to the dairy, it would be extremely easy to reach this grade. It has been urged, therefore, that a different grading be required of the country and of the city. Perhaps there is some justification in this, but at present it is thought that the end can be reached by the smaller communities requiring a higher grade than the larger.

The results of the work of this Laboratory for the last six years upon the milk of Connecticut has given us a pretty good idea of its general quality and grade. Under the grading system above referred to the only milk that can be prop-

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erly classified under Grade A is that which comes either from tuberculin tested cattle or has been properly pasteurized. Inasmuch as tuberculin tested cattle are by no means widely-distributed over this State, and inasmuch as pasteurizing is as yet not common, very little of the milk in Connecticut can be sold under Grade A. The grade of Connecticut milk, however, is satisfactory in all respects except the lack of pasteurization, and the results of the many thousands of examinations that we have made upon the milk all over the State proves that nearly all of the milk that is now offered for sale in the State of Connecticut could be sold as Grade A milk if it were only possible to pasteurize it in a proper manner. As rapidly as pasteurization can be introduced, therefore, the people of Connecticut can be supplied with Grade A milk. Without such pasteurization, however, most of the milk in Connecticut cannot be placed in any of the grades that are recognized by the national Commission of Standards as proper milk to be offered for sale with due reference to the safety of the consumer.

GRADING BY QUALITY ALONE.

Another method of grading milk has been suggested, depending upon the quality of the milk alone, without reference to the dairy conditions under which it has been produced. This is a method which can give to the dairyman, at a glance, a general idea of the quality of his milk and has manifest advantages both to the producer and to the consumer. In obtaining such a general grade of milk it is manifest that there should be considered at least three factors. 1. The chemical quality, which should take into consideration the percentage of fat and the percentage of solids not fat. 2. The presence or absence of dirt. 3. The number of bacteria present. This Laboratory has recently adopted a method of grading milk in percentages in which all three of these factors are concerned, and at the present time and hereafter reports that are sent to dairymen will contain, in addition to the data as to the analysis of the various samples of milk, the *general grade* of the milk expressed in percentage. To obtain a milk which will score 100% grade it is necessary to have 4.5% fat or over, to have a refractometer reading of 37.5 or more, to show no dirt, and to have a bacterial content of under 5,000. Any failures to reach these conditions will result in reducing the grade of milk in percentages by a definitely specified amount which is uniformly applied to all samples of milk. By this method of grading it will be evident that a Holstein milk will never reach a grade of 100%, inasmuch as milk from this breed of cattle will not show 4.5%

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of fat. Milk dealers, therefore, who keep this breed of cattle must always recognize that their percentage grade cannot reach that of other rivals who keep a breed of cattle that produces a higher per cent. of fat. The matter of cleanliness and bacteria, however, as well as the total solid content of milk can be satisfactorily controlled by those who keep Holstein cattle as well as others. The purpose of obtaining and reporting these per cent. grades of their milk is to stimulate the different milkmen to improve the quality of their milk, and if possible to develop some rivalry among them in furnishing to the public, milk that stands upon a higher grade than in the past. If it is possible, in the future, to bring about a condition in which a milk can be sold by grades, the public milk problem would be largely solved.

TESTING THE EFFICIENCY OF PASTEURIZING PLANTS.

The growing appreciation of the need of pasteurization in order to produce a safe milk supply is leading in Connecticut, as elsewhere, to the establishment of pasteurizing plants which can furnish pasteurized milk to the public. Experience of many years has proved that pasteurization, to be of any value, must be carefully performed, and it is certainly a fact that in many places *commercial pasteurization* has really not improved milk at all. Where, therefore, a pasteurizing plant is established which is to furnish a pasteurized milk to the public, in order that it may be relied upon, it is necessary that there be an official control of the efficiency of the process. Such control can only be brought about through careful testing of the product by bacteriological methods. During the last year this Laboratory has been called upon to test the efficiency of pasteurizing process in two commercial plants, one in New Haven and one in Middletown. The examination has involved both an inspection of the plant itself and a series of examinations of the milk. For the latter purpose bottles of the unpasteurized milk and at the same time bottles of the pasteurized milk have been carefully sealed and shipped to the Laboratory, carefully packed in ice. The bacteriological analysis of the two samples is made and a comparison of the result contrasting the number of bacteria in the untreated with that present in the pasteurized sample shows the efficiency of the pasteurizer. These tests in each of the two plants have been continued for a period of several weeks until results showed a fair uniformity of product, specimens being received several times a week. In both cases the tests were continued until a satisfactory and uniform product showed that the pasteurization was carried on in an efficient manner. In one of these plants the milk is pasteurized in the

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bottle, in the other in a tank by the holding process. The results of pasteurization in the bottle have been on the whole superior to the other method. Inasmuch as pasteurization is a factor closely related to public health this Laboratory offers its services in the testing of the efficiency of pasteurizing in commercial plants that may wish to introduce this method of furnishing a safe milk to their patrons.

The following tables give a summary of the milk examinations made during the last two years:

TABLE No. XI.

Milk samples from October 1, 1912, to October 1, 1913.

Town	No. Samples	Town	No. Samples
Ansonia	30	Madison	15
Baltic	30	Manchester	27
Beacon Falls	13	Marlborough	36
Berlin	18	Meriden	25
Bethel	8	Middletown	740
Bozrah	20	Milford	35
Branford	36	Naugatuck	31
Bristol	116	New Britain	56
Canaan	10	New Canaan	11
Chatham	17	New Hartford	19
Cheshire	20	New Milford	22
Clinton	16	New London	582
Colchester	18	Newtown	13
Collinsville	41	Norfolk	12
Cornwall	4	Norwalk	80
Cromwell	19	Norwich	198
Danbury	24	Old Saybrook	2
Danielson	35	Orange	5
Darien	19	Plainville	6
Derby	23	Putnam	299
East Granby	8	Ridgefield	9
East Haddam	11	Rockville	156
East Hartford	4	Saybrook	13
East Windsor	21	Seymour	18
Enfield	38	Sharon	12
Essex	18	Shelton	39
Fairfield	6	Somers	11
Glastonbury	20	Southbury	5
Greenwich	92	South Norwalk	30
Griswold	36	Southington	37
Guilford	19	South Windsor	29
Hamden	23	Stafford	9
Hartford	2	Stafford Springs	34
Hebron	24	Stamford	18
Lebanon	4	Stonington	23
Litchfield	12	Stratford	46
Lyme	20	Tariffville	18

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Town	No. Samples	Town	No. Samples
Terryville	26	Wethersfield	3
Thomaston	36	Willington	7
Thompson	11	Wilton	15
Torrington	148	Windsor	18
Uncasville	11	Windsor Locks	22
Wallingford	28	Winsted	216
West Hartford	1	Woodstock	14
Westbrook	12		
West Haven	2		
Westport	30	Total	4,196

Table No. XII.

Bacteriological Analysis.

Bacteria count	No. samples
50,000 and under	3,336
50,000 to 100,000	185
100,000 to 500,000	490
500,000 to 1,000,000	54
Over 1,000,000	11
Not counted	114
Total	4,196

Table No. XIII.

Dirt recorded in per cent. since April.

Per cent. clean	No. samples
90% and over	946
75% to 90%	943
50% to 75%	130
Under 50%	19
Total	2,038

From October 1, 1912, to October 1, 1913.

No. samples below 3.25% fat	209
No. samples 7% and over fat	94
No. samples containing added water	67
No. samples of skim milk	29
No. samples of cream	81
No. samples tested for preservatives	6

(Of these one contained formaldehyde.)

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TABLE XIV.

Milk Samples from October 1, 1913, to October 1, 1914.

Town	No. Samples
Ansonia	19
Baltic	30
Beacon Falls	15
Berlin	42
Branford	36
Bridgeport	1
Bristol	147
Brooklyn	36
Canaan	4
Chatham	6
Cheshire	11
Chester	1
Clinton	4
Colchester	12
Collinsville	56
Cornwall	13
Cromwell	16
Danbury	17
Darien	13
Danielson	24
Derby	30
East Granby	2
East Haddam	9
East Hartford	3
East Windsor	14
Enfield	47
Essex	12
Fairfield	6
Glastonbury	18
Greenwich	47
Griswold	41
Guilford	18
Hamden	23
Hartford	7
Hebron	16
Litchfield	2
Lyme	4
Madison	4
Manchester	186
Marlboro	42
Meriden	109
Middle Haddam	4
Middletown	455
Milford	34
Naugatuck	27
New Canaan	10
New Hartford	9
New Haven	44
New London	579
New Milford	4
Newtown	16
Noroton	2
Norwalk	6
Norwich	202
Old Lyme	8
Old Saybrook	9
Portland	1
Putnam	171
Ridgefield	4
Rockville	150
Saybrook	8
Seymour	30
Sharon	5
Shelton	46
Southington	34
South Norwalk	24
South Windsor	6
Stafford Springs	33
Stamford	9
Stonington	65
Stratford	44
Tariffville	19
Terryville	8
Thomaston	24
Thompson	15
Torrington	143
Uncasville	11
Wallingford	24
Westbrook	20
West Haven	6
Westport	18
Wethersfield	4
Willimantic	2
Wilton	16
Windsor	17
Windsor Locks	14
Winsted	216
Woodstock	25
Total	3,764

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TABLE XV.

Bacteriological Analysis from October 1, 1913 to October 1, 1914.

Months	Under 5,000	5,000 10,000	10,000 25,000	25,000 50,000	50,000 100,000	100,000 500,000	500,000 1,000,000	Over 1,000,000	Not counted	Total
1913										
October,	70	110	84	8	5	27	3	2	10	319
November,	122	90	34	5	0	7	0	0	6	264
December,	224	83	20	1	0	4	0	0	2	334
1914										
January,	138	64	42	15	7	4	0	0	1	271
February,	123	46	32	6	7	10	1	0	4	229
March,	75	62	49	24	25	34	9	3	4	285
April,	66	77	96	40	31	17	1	3	3	334
May,	44	96	126	37	20	26	3	1	7	360
June,	83	94	78	36	18	26	2	1	12	350
July,	44	93	106	39	31	30	5	7	0	355
August,	32	48	82	41	38	40	10	3	11	305
September,	43	50	89	75	39	32	6	5	19	358
Totals,	1,064	913	838	327	221	257	40	25	79	3,764

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TABLE XVI.

Dirt Recorded in Per Cent.*

Months	90-100%	75-90%	50-75%	Under 50%	Not counted	Total
1913						
October	136	126	45	4	8	319
November	126	111	18	2	7	264
December	131	162	33	6	2	334
1914						
January	58	144	61	6	2	271
February	38	103	73	9	6	229
March	46	111	113	13	2	285
April	77	189	60	6	2	334
May	74	219	51	2	14	360
June	97	198	41	3	11	350
July	66	229	53	4	3	355
August	42	198	50	4	11	305
September	91	216	41	4	6	358
Total	982	2,006	639	63	74	3,764

Number of samples below 3.25% fat	120
Number of samples 7% fat and over	60
Number of samples containing added water	40
Number of samples of skim milk	19
Number of samples of cream	56
Number of samples tested for preservatives	3

TABLE XVI.

General Grading of Milk Samples from January 1 to October 1, 1914.

General Grade	No. of Samples
95-100	174
90- 95	710
85- 90	803
80- 85	429
75- 80	218
70- 75	125
60- 70	111
50- 60	34
40- 50	2
Total,	2,606

*The percentage in this table is purely arbitrary, 100% meaning perfectly clean and the lower percentages indicating lower arbitrary grades of cleanliness.

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EXAMINATION OF WATER SUPPLIES

The examination of water supplies in the State has been continued during the last two years as in previous years. These examinations have included regular examinations from twenty-two public water supplies, and isolated examinations of twenty-one others, the results of these analyses being shown in the table given below. It has included also the examination of 272 wells, which have been either suspected of being contaminated or have been so widely used as to be properly classed under the head of public water supplies. It has not been possible for this Laboratory to examine the water of all wells for which analyses have been requested. In general, the Laboratory holds itself ready to undertake the examination of water supplies where public health is concerned, but not the analysis of purely private supplies. Water supplies, for which a requisition for analysis is sent by the County Health Officers are analyzed here; but at present we have no authority for analyzing supplies unless authorized to do so by a County Health Official or members of the State Board.

ANALYSIS OF SPRING WATER.

The last Legislature placed in the hands of the State Board, the licensing of dealers in spring water, a business which has rapidly grown within the last few years. Wherever there has been such application for water analysis for the sale of water, it is customary for the State Board to make the proper inspection, to collect and ship to this Laboratory samples of the water for analysis. As the results of the inspection and analysis combined license to sell is given or refused. During the last years there have been seventy-one such wells and springs analyzed in this Laboratory for determining the fitness of the water as a source of supply deserving of a license. The large majority of samples submitted proved to be good water, but in a few cases impurities have been found, indicating the presence of more or less dangerous contamination.

INTERPRETATION OF THE RESULTS OF ANALYSES.

Those to whom the reports of analyses are sent do not always appreciate the meaning of these analyses and are con-

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sequently unable to interpret the general significance of the analysis as a whole, except as a few words of final conclusion are added to a report. It seems desirable, therefore, here briefly to state the significance of the various features which are determined by the analyses as they have been carried on in this Laboratory. It must be understood at the outset that in determining whether any sample of water is in proper condition for use, no one factor can be relied upon, but a general combination of a number of factors as determined by the analyses. The factors determined in the analysis and their significance is briefly as follows:

Physical Properties.—Each sample of water is tested for its color, odor, sediment and turbidity. These factors have little to do with the healthfulness of the water, but much with its general appearance and its attractiveness to the public. A highly colored water or one with a strong odor, may be decidly undesirable as a public water supply, even though it may be wholesome to drink and not offer the slightest danger to those using it. Unattractive colors and odors are not infrequently produced by the growth of algae in the water, and they seriously detract from the value of the water as a public water supply, even though from a standpoint of health the water can be passed as perfectly reliable.

Mineral Content.—The amount of mineral matter in the water again is a factor that commonly does not materially affect the health or wholesomeness of the water as a drinking supply, unless it becomes very high. It is true that sometimes unwholesome minerals like lead or copper might be found in the water, and these would directly affect its wholesomeness and render it unfit to drink. In a few cases during the last two years we have examined water and determined the presence of lead in sufficient quantities to cause lead poisoning; but apart from a few such instances the minerals that are present are not unwholesome unless present in large quantities. The presence of minerals, however, does affect the hardness of the water, which is clearly a factor in its value as a public supply. In rare instances the quantity of minerals has been so great as to render a sample of water unfit for anything except a medicated water. In one instance in the last two years a sample of well water was submitted which contained 1,425 parts of minerals per million, a large part of which was sulphate of magnesium. This sample was submitted because it was thought to be producing digestive disturbance. It was not surprising that such would be the result, for sulphate of magnesium is the basis of Epsom salts, and the water in question, therefore, constituted a very good cathartic. It was certainly not a proper sample for a

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water supply. Except in a few such instances, however, the quantity of minerals in the water supply is only of significance as affecting its hardness.

Organic Products.—In our tests we make an examination for albuminoid ammonia, for free ammonia, for nitrites, and nitrates. All of these indicate contamination, for they are all decomposition products of proteid matter. All waters, however, are likely to contain small quantities of ammonia, albuminoid of ammonia, and nitrates, the amount present varying with the kind of water. In interpreting the results of the analysis, therefore, it is necessary to know approximately the maximum quantity of these organic materials that may be expected in uncontaminated waters of the nature of the samples submitted. Ground waters, like wells and springs, will have quite different quantities of these materials from surface waters like rivers and lakes, all of which factors have to be taken into consideration in the interpretation of the chemical results. The presence of nitrites in any sample of water, however, is an indication of fresh contamination, for nitrites very rapidly are converted into nitrates, and so if an appreciable amount of nitrites are found in the water it indicates that the sample of water must have been recently contaminated by some decomposing albuminoid material. Pure, uncontaminated waters contain practically no nitrites, though they may contain nitrates in moderate amount and still be beyond suspicion of unwholesomeness.

Oxygen Consumed.—This is a factor which tells essentially of the quantity of carbon that is present in the water. It is ordinarily a matter of no very great significance in surface waters; for at certain seasons of the year nearly all surface waters contain harmless algae, which causes the dissolved oxygen to increase, inasmuch as these algae always contain a certain amount of carbon which absorbs oxygen. In waters that are badly contaminated with sewage also the amount of carbon increases as a rule, and this will cause an increase in oxygen consumed. Under normal conditions, however, the figure for oxygen consumed does not run very high, and is of no very great significance.

Chlorine—All soil waters contain a certain amount of chlorine, the quantity that is present varying with the distance from the ocean. Near the salt water the amount of chlorine in the soil waters is high, and decreases with more or less regularity as the distance from the sea increases. Tables giving the quantity of chlorine to be expected in any region of the State have been prepared for comparison with the analyses of the examined water. The presence of chlorine in a sample above the normal indicates that the water has

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been contaminated with something unusual. The most common source of such chlorine is the decomposition of albuminoids and other organic material, which always leaves behind it certain amounts of chlorine which become absorbed in the water. In this case chlorine indicates danger. There are, however, occasionally local causes of chlorine which are of no special significance. Common salt contains chlorine in large quantities, and it may sometimes happen that a water supply is contaminated by its proximity to some of this material. A slight increase in the amount of chlorine above the normal is not unusual even in pure uncontaminated water; and unless other indications of contamination are present a slight increase of chlorine is not regarded as indicating any unwholesome contamination. When, however, an increase in chlorine is accompanied by an increase in organic products it is always suspicious and usually indicates sewage contamination. Not a few samples are found by this Laboratory, in which the only indication of contamination is a slight excess of chlorine over the normal. Such samples are always classed as wholesome and giving no indication of dangerous contamination.

Bacterial Analyses.—It is now recognized that the bacterial examination of the water gives fully as much data concerning its wholesomeness as the chemical examination. It is true that water can sometimes be condemned from its chemical examination alone, and it can also frequently be condemned from its bacteriological examination; but no water can safely be classed as pure and uncontaminated unless it shows both a good bacteriological and chemical analysis. In the bacteriological analysis of water we make the determination of the total number of bacteria that will grow at 37° c., and also the number that will grow at 20°. These two figures giving the total quantity of bacteria are factors of significance, because the number of bacteria that are liable to be found in pure surface and pure ground waters is approximately known. If the number that is found in any samples runs far above this it is an indication, without any further chemical analysis, that there is some contamination from some unusual source, probably of organic decay. In addition to this, examination is always made for the colon bacillus. Our tests for the presence of colon bacillus are those that are commonly made in the Standard Methods, and need not be described here. The significance of the presence of colon bacillus, however, is very generally misunderstood.

Significance of Colon Bacillus.—It must, in the first place, be recognized that colon bacillus is not in itself a dangerous organism, nor pathogenic under any ordinary conditions.

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The colon bacillus is an intestinal organism, finding its most natural habitat in the intestines of animals, and especially in the human intestines. It is a question whether it has a normal habitat anywhere in nature outside of the intestine of animals. Some have claimed, however, that it may be found in small quantities even in regions uninhabitated by animals, and certainly uncontaminated with the excreta of man or other animals. That this is true has not been uniformly admitted by bacteriologists. But if it is true it is certain that the colon bacillus is not abundant in any localities otherwise than those that are contaminated with excreta and if found at all is found in small numbers only. For this reason the presence of any considerable number of colon bacilli in a sample of water is looked upon as indicating that the water has become contaminated with the excreta from animals, and inasmuch as the most common source of contamination of water is sewage, the presence of colon in any sample of water is looked upon as prima facie evidence that that water has been contaminated with human sewage, and is therefore unfit for use as a drinking supply. It must not, however, be understood that the simple presence of colon in water in itself makes the water injurious. It indicates merely the presence of contamination, which may make the water unwholesome. It would certainly be very desirable if there were laboratory methods by which the actual presence of typhoid bacilli in water could be determined. But this organism cannot be detected in water by any practical method of laboratory technique. Indeed, it is doubted whether there is any method which is reliable in detecting the presence of typhoid germs in water. Inasmuch, therefore, as we cannot detect the presence of typhoid bacillus but can determine the colon bacillus, and inasmuch as the colon comes ordinarily from sewage contamination, and typhoid fever germs also come from the same source, it is customary to use the presence of colon as an indication of the extent of the sewage contamination of the water. From this it will follow that a sample of water may show the colon bacilli in considerable numbers, and yet not contain any harmful germs. Such water, however, is dangerous, because any water that is contaminated with human faecal matter is liable at any time to become contaminated with typhoid or other disease germs that may be in sewage. Colon bacillus, therefore, while not in itself dangerous, is a mark of danger; it is a danger signal indicating that the water which contains it is no longer safe, although any individual sample may be perfectly wholesome in spite of the presence of colon bacilli. In interpreting the results of the bacteriological examination of water, therefore, these facts must be

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taken into consideration. Ground waters, like those from springs and wells, when pure, should contain no colon bacilli whatsoever, and the presence of any colon bacilli in such waters is regarded as indicating suspicion and showing that the well is receiving some contamination, and is therefore not safe. Somewhat different, however, are the conditions of surface waters. It not infrequently happens that surface waters, like those of a pond, which receive drainage from fields where cattle are pastured, may contain a few colon bacilli, and yet not be contaminated sufficiently to be in the slightest degree injurious. It is not uncommon to find the waters of good uncontaminated supplies showing a small number of colon bacilli. It is customary in our Laboratory tests to determine whether the colon bacillus is found in .1 c. c., in 1 c. c., and in 10 c. c. If it is not found in 1 c. c but is found in 10 c. c., it indicates that the number present is less than 1 per c. c., and more than 1 per 10 c. c. When such a small quantity of the colon is found in surface waters from field drainage it is not regarded as serious and does not indicate any suspicion as to the wholesomeness of the water in question. When, however, the number of colon rises as high as 1 per c. c., it is always a subject of suspicion, especially if this is accompanied by indications of chemical contamination, as shown by high chlorine content or the presence of nitrites or ammonia. When, however, colon is found in any quantity in ground water (springs and wells) it is always a source of suspicion and must always be considered before such water can be passed as wholesome. Speaking in general, therefore, any number of bacilli of the colon type sufficient to show the presence of the organism in 1 c. c. of water is always an indication of suspicion, whatever the source of water.

In determining as to the wholesomeness of any sample of water all of these factors are taken into consideration. It is usually found that they vary together and when there is an indication of chemical contamination there is almost always a high bacterial content, and the presence of the colon bacillus is evident; and vice versa, when colon is found, it is almost always accompanied by evidence of contamination as shown by chemical analysis. There are some instances where the chemical and bacteriological analyses do not agree, and in these cases judgment must be used in determining the conclusion to be drawn. In the majority of cases, however, the conclusions are very evident after the analysis is made, and no doubt rises as to whether a given sample of water should be passed as wholesome and safe for use or as suspicious and unsafe for general use. It must be remembered that no one factor of the analysis is sufficient to indicate the nature of the

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water, because almost any of these may be modified by certain peculiar local or temporary conditions. The presence, however, of colon bacillus and nitrites in any considerable quantity in any sample of water is enough at once to condemn it as unwholesome because of recent contamination from some source of faecal matter.

Occasionally in the reports sent out statement is made that the analysis shows remote contamination or recent contamination. The significance of this is as follows: As soon as faecal matter gets cast upon the ground or in water it begins to undergo a series of decompositions which rapidly change its character and eventually destroy it. The organic matter it contains is decomposed into gases and dissipated and the pathogenic bacteria lose their original character and die or become harmless. The dangers associated with contamination of drinking water by sewage therefore gradually become less and finally disappear. Hence if a water supply has a source of contamination so far removed that the sewage material has full opportunity to be thoroughly decomposed before it reaches the water, the danger from the contamination has disappeared. Such waters may still show evidence of contamination in the chemical and bacteriological analysis but would not be a source of much danger. It is always to be bourne in mind, however, that in such cases there is always a possibility that the contamination may become greater and hence dangerous. Thus a report of *recent* contamination always indicates the existence of immediate danger, while *remote* contamination suggests the possibility of danger in the past or future.

The total number of water and sewage samples analyzed during the last two years has been 1,170, representing an increase of fifteen per cent. over the work of any previous year.

LABORATORY RECORDS.

The following tables include only the records of municipal supplies. All other analyses are on file at the office of the Board of Health.

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EXAMINATION OF PUBLIC WATER SUPPLIES

ANSONIA—High Pressure System.

All chemical data given in parts per million.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.8 / Chlorine	AMMONIA		NITROGEN AS		Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
						Free	Albuminoid	Nitrites	Nitrates				
2-2650	10-31-12	3	43	37	3.6	.036	.110	.001	.00	4.0	19.0	300	+
2-2676	11-13-12	10	57	53	3.8	.012	.240	.000	.00	7.0	21.0	——	+
2-2714	12-10-12	4	30	44	3.6	.006	.330	.000	.00	3.8	20.0	190	+
2-2815	3- 4-13	6	18	39	2.7	.006	.160	.001	.06	3.1	19.0	2200	+
2-2981	6-24-13	3	26	45	2.6	.006	.110	.000	.05	2.9	18.0	15	0
2-3538	6- 9-14	3	35	35	2.2	.012	.060	.000	.00	3.8	13.0	145	0
	Average	4	34	42	3.0	.013	.168	.000	.01	4.1	18.0	570	

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ANSONIA—Low Pressure System.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.8 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
2-2715	12-10-12	3	35	49	4.0	.012	.340	.000	.00	4.8	17	350	+
2-2816	3- 4-13	10	14	40	2.8	.006	.130	.002	.09	2.6	22	27	0
2-2982	6-24-13	2	17	54	2.9	.030	.120	.000	.01	2.5	20	8	0
	Average	5	22	47	3.2	.016	.196	.000	.03	3.3	19	128	
	Miscellaneous Samples.												
2-2983	6-24-13	7	27	44	3.0	.054	.350	.000	.02	4.2	16	9	0
2-3164	10- 1-13	3	25	66	3.4	.024	.210	.001	.00	3.5	25	14	0
2-3165	10- 1-13	2	30	60	1.8	.000	.120	.001	.00	4.0	19	34	0
	Bacteriological Examinations.												
2-3539	6- 8-14	..	..	..	..	...	...	..	..	..	..	97	+
2-3715	9- 9-14	..	..	..	..	...	...	..	..	..	..	120	0
2-3716	9- 9-14	..	..	..	..	...	...	..	..	..	..	80	0
2-3743	9-23-14	..	..	..	..	...	...	..	..	..	..	432	0
2-3744	9-23-14	..	..	..	..	...	...	..	..	..	..	282	0

Samples collected by the Ansonia Water Co.

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CROMWELL—VILLAGE SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.0 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
34-2649	10-28-12	5	37	66	6.0	.102	.180	.000	.15	3.0	33	80	0
34-2697	11-25-12	6	18	55	3.2	.018	.040	.000	.25	3.4	31	100	0
34-2736	12-18-12	10	26	69	4.6	.012	.280	.000	.55	2.0	31	280	0
34-2735	1- 8-13	40	28	68	3.2	.108	.080	.000	.28	2.7	35	70	+
35-2810	2-26-13	20	18	365	3.9	.006	.190	.007	.15	2.8	141	..	0
34-2832	3- 6-13	1	15	65	3.9	.096	.090	.001	.35	1.6	47	27	0
34-2861	4- 9-13	1	26	58	3.6	.030	.100	.000	.13	3.0	35	110	0
34-2894	5- 5-13	1	17	65	3.8	.036	.130	.000	.18	2.9	41	50	0
34-2934	6- 2-13	2	28	63	3.4	.018	.120	.000	.08	5.2	31	..	0
34-2995	7- 2-13	4	48	67	4.8	.000	.000	.006	.12	3.2	39	5	0
34-3046	8- 4-13	2	28	64	4.9	.036	.190	.003	.20	3.2	55	7	0
34-3116	9- 8-13	0	27	86	4.4	.000	.030	.000	.03	2.0	65	36	0
34-3170	10- 3-13	1	30	52	4.8	.000	.080	.003	.17	0.8	38	..	
34-3246	11-10-13	5	50	60	4.2	.018	.090	.000	.27	3.6	42	540	0
*34-3273	11-22-13	3	60	163	12.0	.180	.340	.016	.37	9.0	87	..	0
34-3280	12- 3-13	1	30	73	4.6	.012	.060	.001	.16	2.3	44	462	0
34-3340	1- 9-14	3	20	67	4.6	.030	.060	.000	.39	1.5	48	342	0
34-3375	2- 5-14	5	45	55	2.0	.054	.080	.000	.00	3.8	27	1550	0
34-3403	3- 3-14	3	25	46	2.0	.108	.090	.001	.38	4.7	29	4950	0
34-3444	4- 3-14	0	30	36	3.4	.036	.080	.000	.29	3.2	28	220	0

*Water contaminated by fertilizer. Not included in the average.

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CROMWELL—VILLAGE SUPPIY.—(Continued.)

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.0 Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
34-3526	5-28-14	1	35	63	3.4	.036	.080	.001	.10	2.4	46	150	0
34-3584	6-30-14	2	50	83	4.6	.030	.070	.018	.19	2.7	63	45	0
34-3651	7-31-14	1	5	61	4.0	.006	.080	.000	.15	2.0	41	27	0
34-3699	8-31-14	0	15	80	5.2	.006	.030	.000	.20	2.5	42	84	0
34-3765	9-30-14	2	25	77	5.4	.018	.050	.000	.05	2.5	52	175	0
	Average	4	28	76	4.0	.034	.095	.001	.20	2.7	45	443	

Samples collected by a representative of the laboratory.

EAST HARTFORD SUPPLY.

42-3107	9- 3-13	2	20	69	2.6	.006	.070	.001	.04	0.8	25	70	+
42-3249	11-12-13	2	40	58	2.8	.024	.080	.001	.09	3.8	28	..	0
42-3478	4-24-14	0	15	77	2.4	.006	.050	.000	.06	2.6	21	387	0
42-3661	8-12-14	0	20	46	2.4	.000	.020	.000	.08	1.5	26	315	0
	Average	1	23	62	2.5	.009	.005	.000	.06	2.1	25	257	

Samples collected by John H. Walsh, superintendent of water.

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GREENWICH—Town Reservoir.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 3.0 Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
57-2678	11-13-12	10	38	62	3.2	.072	.180	.000	.15	4.0	29	15	0
57-2755	1- 9-13	60	37	244	3.2	.012	.400	.000	.10	7.1	32	780	+
57-2919	5-22-13	0	18	57	3.0	.012	.120	.000	.08	3.7	25	5	0
57-3037	7-25-13	0	20	55	2.8	.006	.030	.003	.02	3.0	35	11	0
57-3414	3-13-14	0	30	51	2.8	.012	.080	.000	.12	3.8	32	46	0
	Average	14	29	93	3.0	.022	.162	.000	.09	4.3	30	171	

Miscellaneous Samples.

57-2681	11-13-12	10	28	56	2.8	.012	.320	.000	.00	4.0	28	18	0
57-2754	1- 9-13	0	1	59	4.8	.012	.020	.000	1.00	0.1	36	11	0
57-2756	1- 9-13	6	0	55	1.8	.012	.180	.000	.85	0.5	25	600	+

Samples collected by Dr. A. W. Klein, Health Officer.

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GROTON—Borough Supply.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 5.1	AMMONIA		NITROGEN AS		Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
					Chlorine	Free	Albuminoid	Nitrites	Nitrates				
59-2781	1-29-13	1	48	48	5.2	.006	.160	.000	.12	7.4	18	..	0
59-2782	1-29-13	0	48	73	5.2	.018	.230	.000	.10	7.5	18	220	0
59-2783	1-29-13	10	49	63	9.8	.012	.230	.000	.20	6.8	18	140	0
59-2784	1-29-13	0	48	45	5.6	.030	.170	.000	.15	6.0	18	70	0
59-2849	4- 2-13	3	48	39	5.6	.024	.110	.000	.02	6.8	10	10	0
59-2850	4- 2-13	3	50	40	5.6	.042	.150	.000	.02	6.5	11	23	0
59-2851	4- 2-13	2	50	38	6.0	.030	.170	.000	.02	7.2	11	190	0
59-2852	4- 2-13	4	55	37	6.0	.036	.200	.000	.03	7.3	11	33	0
59-3062	8-12-13	3	55	42	5.3	.018	.170	.005	.04	7.0	22	1	0
59-3063	8-12-13	3	50	58	5.2	.030	.180	.005	.01	5.5	19	185	+
59-3124	9-10-13	4	45	51	5.4	.012	.100	.001	.02	4.3	27	1	+
59-3666	8-13-14	2	100	51	5.0	.012	.140	.000	.00	8.0	21	12650	0
	Average	2	53	49	5.8	.022	.167	.000	.06	6.6	17	1229	

Samples collected by Dr. F. W. Hewes, Health Officer.

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MIDDLETOWN CITY SUPPLY—HIGBY MOUNTAIN RESERVOIR, NO. 1.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.5 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
89-2635	10-16-12	60	40	47	2.0	.024	.340	.000	.00	3.7	24	40	0
89-2675	11-13-12	80	25	67	2.2	.006	.480	.000	.00	3.6	25	275	+
89-2717	12-12-12	75	30	66	3.6	.006	.410	.000	.00	3.7	38	550	+
89-2766	1-15-13	3	29	44	3.0	.006	.170	.000	.04	4.3	22	19	0
89-2794	2-12-13	8	25	60	3.0	.012	.120	.000	.07	4.8	25	17	+
89-2839	3-13-13	30	20	58	2.6	.030	.210	.000	.02	5.8	21	150	0
89-2876	4-17-13	22	28	39	2.4	.048	.190	.000	.04	3.5	21	..	0
89-2904	5-14-13	22	30	45	2.4	.006	.170	.000	.03	4.0	21	22	0
89-2973	6-18-13	28	38	51	2.4	.036	.180	.000	.00	4.0	20	60	0
89-3015	7-16-13	6	40	68	2.4	.012	.140	.002	.02	3.3	26	1690	0
89-3057	8- 7-13	2	70	67	2.5	.480	.400	.002	.00	6.0	28	10	+
89-3132	9-17-13	6	45	54	2.3	.012	.280	.001	.00	3.4	25	13	0
89-3201	10-21-13	80	125	104	2.4	.030	.280	.001	.05	6.0	32	1235	0
89-3267	11-18-13	5	55	83	2.4	.012	.130	.001	.06	2.9	23	135	0
89-3313	12-17-13	1	40	65	2.4	.000	.140	.000	.06	5.5	25	92	0
89-3347	1-14-14	2	45	63	3.2	.030	.220	.000	.04	3.9	26	110	0
89-3393	2-17-14	0	40	60	2.4	.030	.140	.000	.04	6.2	30	322	0
89-3420	3-18-14	0	30	33	2.2	0.30	.080	.000	.00	3.2	20	925	0
89-3463	4-15-14	2	30	63	2.4	0.12	.080	.000	.00	3.6	20	172	0

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MIDDLETOWN CITY SUPPLY—HIGBY MOUNTAIN RESERVOIR, No. 1.—(Continued).

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.5 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
89-3507	5-20-14	1	25	56	2.2	.030	.190	.000	.00	5.4	19	1200	0
89-3551	6-17-14	3	25	53	2.0	.006	.080	.000	.00	3.5	21	105	+
89-3609	7-14-14	1	15	45	1.8	.030	.090	.000	.00	3.2	26	437	0
89-3677	8-19-14	2	25	55	2.6	.060	.120	.000	.00	2.6	26	170	+
89-3727	9-16-14	3	20	72	2.2	.012	.120	.000	.00	3.0	29	300	0
	Average	18	37	58	2.4	.040	.198	.000	.01	4.1	24	349	

MIDDLETOWN CITY SUPPLY—HIGBY MOUNTAIN RESERVOIR, No. 2.

89-2718	12-12-12	80	25	58	2.2	.006	.440	.000	.00	4.6	32	60	0
89-3007	7-10-13	10	30	78	..	.066	.320	.005	.01	5.8	41	1040	0
89-3056	8- 7-13	3	70	100	1.9	.030	.050	.002	.00	7.7	54	54	0
89-3553	6-17-14	2	10	66	2.4	.036	.130	.000	.00	3.2	44	1200	0
	Average	23	33	75	2.1	.034	.235	.001	.00	5.3	42	588	0

MISCELLANEOUS SAMPLE.

89-3552	6-17-14	3	55	65	2.2	.018	.240	.000	.00	7.8	36	552	0

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MIDDLETOWN CITY SUPPLY—LAUREL BROOK RESERVOIR.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.5 Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCO_3$	Bacteria per c. c.	Color Bacilli
89-2638	10-17-12	30	27	57	5.0	.012	.520	.000	.00	4.4	30	58	0
89-2687	11-18-12	40	18	64	4.8	.144	.370	.000	.00	3.8	30	120	0
89-2729	12-17-12	25	16	60	5.2	.006	.600	.003	.10	4.6	32	150	0
89-2767	1-15-13	60	30	70	4.4	.384	.240	.000	.07	3.8	32	130	+
89-2840	3-13-13	30	16	72	5.0	.006	.270	.005	.18	4.2	32	85	0
89-2937	6- 3-13	20	18	42	5.8	.084	.200	.000	.02	4.7	30	34	0
89-3071	8-18-13	2	20	69	5.8	.030	.110	.003	.00	1.3	39	7	0
89-3129*	9-11-13	3	27	63	2.8	.030	.080	.125	.07	4.7	71	97	+
89-3134	9-17-13	3	28	41	5.8	.006	.200	.000	.00	4.1	37	56	0
89-3187	10-15-13	2	45	79	5.0	.000	.270	.001	.03	2.1	52	106	0
89-3265	11-17-13	3	30	115	5.4	.132	.140	.001	.07	0.9	34	230	0
89-3308	12-16-13	3	40	73	5.2	.120	.140	.001	.07	4.3	38	..	0
89-3348	1-15-14	5	40	83	6.2	.096	.140	.001	.17	4.3	45	305	0
89-3400	2-25-14	1	30	69	5.0	.054	.090	.000	.15	4.6	35	157	0
89-3436	3-25-14	2	30	78	2.4	.012	.080	.008	.05	3.7	24	45	0
89-3472	4-23-14	3	2	42	4.0	.006	.090	.001	.09	2.3	27	900	+
89-3508	5-20-14	1	15	55	3.8	.024	.060	.001	.00	3.5	33	145	0
89-3557	6-17-14	5	20	70	4.2	.030	.120	.000	.00	3.9	33	12	0
89-3628	7-22-14	2	1	70	4.4	.000	.110	.000	.00	2.6	31	46	0
89-3691	8-25-14	3	15	90	4.6	.012	.140	.000	.00	4.0	36	55	0
89-3741	9-23-14	3	20	63	4.4	.012	.090	.000	.00	3.3	34	8750	+
	Average	12	23	68	4.8	.058	.199	.001	.05	3.5	34	599	

Samples collected by the Middletown Water Dept. *Dead Cow found near reservoir. Not included in the average.

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NAUGATUCK—Low Pressure Service.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.8 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCO_3$	Bacteria per c. c.	Colon Bacilli
95-2720	12-12-12	0	17	47	2.8	.006	.250	.000	.00	2.9	17	350	0
95-2750	1- 7-13	1	19	40	3.0	.006	.220	.000	.07	2.7	18	160	0
95-2791	2- 6-13	0	12	30	2.2	.018	.150	.000	.10	2.3	18	65	0
95-2824	3- 5-13	2	13	36	2.3	.012	.160	.000	.05	2.1	18	140	0
95-2866	4-15-13	3	17	42	2.4	.012	.070	.000	.03	2.9	16	41	+
95-2897	5- 7-13	4	17	52	2.8	.054	.120	.003	.05	2.4	16	210	0
95-2898	5- 7-13	3	17	36	2.9	.012	.140	.000	.03	4.0	16	850	0
95-2941	6- 5-13	4	18	28	2.4	.036	.120	.000	.01	3.4	12	7	0
95-3089	8-22-13	2	27	42	2.3	.012	.050	.003	.00	2.9	21	29	+
95-3157	9-26-13	2	30	61	2.3	.000	.080	.003	.03	4.0	19	6548	0
95-3179	10- 8-13	2	20	48	3.8	.000	.080	.001	.05	4.1	22	524	+
95-3244	11- 8-13	0	60	34	2.6	.012	.090	.000	.06	5.6	17	..	0
95-3328	12-24-13	1	30	83	2.8	.000	.090	.000	.04	3.7	19	1775	0
95-3367	1-30-14	2	30	73	2.0	.030	.140	.000	.07	4.1	21	2200	+
95-3405	3- 5-14	0	35	41	1.8	.030	.080	.000	.06	4.2	18	9100	+
95-3456	4- 9-14	1	30	37	2.0	.030	.060	.000	.12	2.6	17	525	0
95-3499	5-13-14	0	10	34	2.4	.006	.050	.000	.00	2.2	19	3400	0
95-3500	5-13-14	0	5	32	2.8	.018	.060	.000	.00	2.6	18	4550	0
95-3575	6-25-14	3	30	44	2.6	.030	.060	.000	.00	3.8	16	10250	0
95-3622	7-17-14	2	30	45	2.0	.006	.080	.000	.00	3.0	18	100	0
	Average	1	23	44	2.5	.016	.107	.000	.03	3.2	17	2148	

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NAUGATUCK—High Pressure Service.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.8 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Color Bacilli
95-2719	12-12-12	3	28	43	2.2	.006	.280	.000	.00	5.1	20	20	0
95-2790	2- 6-13	0	13	31	2.7	.006	.040	.000	.14	2.9	17	17	0
95-2823	3- 5-13	0	17	38	2.2	.012	.160	.000	.10	2.1	15	38	0
95-2940	6- 5-13	10	42	35	1.2	.048	.400	.000	.03	5.5	14	80	0
95-3090	8-22-13	5	30	55	2.3	.000	.160	.000	.00	6.4	20	17	0
95-3178	10- 8-13	5	50	61	3.0	.012	.230	.001	.04	9.3	16	296	+
95-3245	11- 8-13	0	40	39	3.0	.006	.110	.001	.03	3.2	34	190	0
95-3329	12-24-13	1	40	65	2.8	.000	.080	.000	.07	4.0	20	..	
95-3366	1-30-14	0	3	72	3.2	.036	.080	.000	.09	2.9	19	1850	0
95-3404	3- 5-14	0	30	46	2.0	.030	.060	.000	.07	4.0	17	1400	0
95-3455	4- 9-14	0	20	43	1.8	.030	.060	.000	.10	2.8	16	41	0
95-3733	9-17-14	45	225	72	2.4	.012	.280	.000	.00	23.5	23	130	0
	Average	5	44	50	2.4	.016	.161	.000	.05	5.9	19	370	

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NAUGATUCK—Beacon Hill Brook.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.8	AMMONIA		NITROGEN AS		Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
					Chlorine	Free	Albuminoid	Nitrites	Nitrates				
95-2606	10- 2-12	3	26	62	3.8	.018	.120	.007	.20	3.5	17	190	+
95-2607	10- 2-12	1	27	46	3.4	.030	.080	.001	.20	2.2	19	300	+
95-3011	7-16-13	1	20	55	3.3	.048	.060	.016	.09	2.9	29	90	0
95-3158	9-26-13	1	10	66	3.2	.000	.030	.003	.09	1.4	23	3380	0
	Average	1	20	57	3.4	.024	.072	.006	.14	2.5	22	990	
	Long Hill Brook Reservoir.												
95-2658	11- 5-12	3	27	54	4.1	.012	.140	.000	.00	3.1	23	100	+
95-2751	1- 7-13	1	19	38	2.2	.006	.210	.000	.06	2.0	18	275	0
95-3010	7-16-13	3	29	60	2.3	.048	.110	.001	.03	5.1	28	13	0
95-3576	6-25-14	2	100	87	2.0	.048	.160	.000	.00	9.7	28	4250	0
	Average	2	43	59	2.6	.028	.155	.000	.02	4.9	24	1159	
	Miscellaneous Sample.												
95-3621	17-17-14	1	45	60	2.2	.030	.090	.000	.00	4.4	23	422	+

Samples collected by the Naugatuck Water Co.

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NEW CANAAN SUPPLY—UNFILTERED WATER.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.7 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
97-2601	10- 1-12	4	46	56	2.2	.006	.290	.000	.00	6.2	22	100	0
97-2664	11- 5-12	5	43	59	3.0	.012	.130	.000	.00	5.8	29	50	+
97-2716	12-10-12	4	47	68	3.2	.006	.390	.000	.00	8.3	26	325	0
97-2757	1-13-13	18	46	53	2.6	.000	.330	.000	.08	6.3	27	..	0
97-2787	2- 4-13	20	38	51	3.0	.012	.350	.000	.14	5.2	25	90	0
97-2814	3- 3-13	13	28	94	2.8	.012	.180	.000	.08	4.6	23	80	0
97-2880	4-22-13	25	47	67	5.5	.012	.120	.000	.06	5.5	22	210	0
97-2889	5- 7-13	8	41	54	2.1	.018	.090	.000	.04	5.3	24	..	0
97-2944	6- 6-13	5	48	55	2.2	.030	.170	.000	.08	7.0	20	260	0
97-3002	7- 9-13	1	50	9	1.7	.066	.120	.005	.06	6.4	25	52	0
97-3049	8- 6-13	0	34	88	2.1	.036	.120	.010	.04	4.9	30	7	0
97-3139	9-19-13	0	29	60	2.2	.012	.120	.000	.00	3.3	40	715	0
97-3205	10-21-13	0	40	67	2.4	.006	.080	.001	.05	1.3	36	47	0
97-3384	2-11-14	4	55	59	2.4	.030	.140	.000	.00	6.6	24	1100	+
	Average	7	42	60	2.6	.018	.187	.001	.04	5.4	26	253	

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NEW CANAAN SUPPLY—FILTERED WATER.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.7 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
97-3255	11-12-13	0	1	58	2.8	.030	.080	.001	.03	0.7	30	20	0
97-3295	12-11-13	1	20	73	2.6	.000	.090	.000	.00	3.4	32	650	0
97-3333	1- 6-14	0	0	50	2.8	.000	.080	.000	.03	2.1	33	175	0
97-3383	2-11-14	0	0	51	2.4	.006	.060	.000	.00	1.8	29	12	0
97-3409	3- 6-14	0	0	78	2.6	.006	.060	.000	.03	3.1	27	38	0
97-3462	4-14-14	0	0	62	2.6	.006	.050	.000	.00	0.9	20	150	0
97-3498	5-12-14	0	0	44	2.6	.030	.080	.000	.00	1.1	26	14	0
97-3578	6-25-14	0	0	71	2.2	.018	.050	.000	.00	1.3	28	64	0
97-3615	7-14-14	0	3	86	1.6	.012	.060	.000	.00	2.8	29	437	0
	Average	0	2	63	2.3	.012	.067	.000	.01	1.9	28	173	0

Samples collected by the New Canaan Water Company.

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NEW HARTFORD SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.3 Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
99-3135	9-17-13	2	40	53	1.1	.024	.060	.001	.10	5.3	28	44	+
99-3724	9-15-14	0	25	78	1.6	.018	.110	.000	.00	3.3	36	2900	0
99-3725	9-15-14	0	35	47	1.2	.006	.060	.000	.00	4.0	21	292	0
	Average	0	33	59	1.3	.016	.076	.000	.03	4.2	28	1078	

Samples collected by Frank P. Marble, Health Officer.

NEW LONDON SUPPLY.

105-3686	8-24-14	1	16	50	4.0	.000	.050	.000	.00	2.7	16	500	0
105-3746	9-24-14	1	2	40	4.2	.018	..	.000	.00	2.5	16	925	0
	Average	1	9	45	4.1	.009	.050	.000	.00	2.6	16	712	

Samples collected by Dr. J. T. Black, Health Officer.

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NORTH CANAAN SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.2 / Chlorine	AMMONIA / Free	AMMONIA / Albuminoid	NITROGEN AS / Nitrites	NITROGEN AS / Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
110-2622	10- 8-12	0	17	132	4.0	.012	.230	.001	.00	1.8	108	12	0
110-2683	11-14-12	0	0	144	2.6	.090	.120	.000	.00	1.8	119	27	0
110-2737	12-19-12	1	1	110	2.1	.138	.090	.000	.00	1.7	102	12	+
110-2806	2-21-13	0	2	96	1.6	.012	.050	.000	.09	2.6	84	4	0
110-2842	3-14-13	0	3	78	1.6	.018	.036	.000	.11	1.8	66	28	0
110-2877	4-17-13	1	12	102	1.6	.054	.060	.001	.07	1.8	107	..	0
110-2914	5-19-13	0	4	134	1.8	.006	.060	.001	.01	1.1	123	10	0
110-2945	6- 6-13	0	16	189	2.4	.018	.090	.000	.01	1.5	155	180	0
110-3006	7-10-13	2	11	131	1.9	.072	.050	.001	.01	1.2	137	605	0
110-3055	8- 7-13	0	10	135	2.6	.024	.050	.003	.01	0.5	206	5	0
10-3149	9-24-13	0	0	148	2.6	.006	.000	.004	.02	1.1	145	42	0
110-3182	10-10-13	0	0	158	2.8	.006	.030	.002	.03	1.1	157	267	+
110-3261	11-14-13	0	10	194	2.4	.036	.080	.010	.03	0.4	168	242	0
110-3331	12-31-13	0	0	117	2.0	.000	.060	.001	.00	1.5	117	47	0
110-3337	1- 7-14	0	0	166	2.2	.000	.060	.000	.02	1.7	162	925	0
110-3401	2-26-14	0	0	139	2.0	.006	.050	.000	.07	1.1	138	5	0
110-3424	3-24-14	0	0	110	1.8	.030	.050	.000	.07	0.5	108	16	0
110-3471	4-22-14	0	0	108	1.4	.012	.050	.000	.08	0.8	105	165	0
110-3523	5-27-14	0	0	148	1.4	.012	.030	.000	.00	1.1	147	700	0

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NORTH CANAAN SUPPLY—(Continued).

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.8 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
110-3572	6-24-14	0	0	150	2.0	.030	.050	.000	.00	1.5	147	925	0
110-3634	7-24-14	0	0	150	2.8	.048	.080	.000	.00	0.4	169	48	0
	Average	0	4	135	2.1	.030	.050	.001	.03	1.3	131	213	

Samples collected by Dr. F. H. Lee, Health Officer.

NORWALK SUPPLY.

112-3313	9- 5-13	15	90	71	2.2	.024	.190	.000	.05	4.0	42	614	0
112-3439	3-30-14	0	35	45	2.0	.012	.060	.000	.10	3.9	25	215	0
112-3619	7-16-14	0	45	60	1.6	.030	.080	.000	.00	5.4	29	800	0
112-3683	8-21-14	3	43	78	2.0	.018	.040	.000	.07	5.5	28	1550	0
	Average	4	53	63	1.9	.021	.017	.000	.05	4.7	31	794	

Samples collected by the Norwalk Water Dep't and Dr. W. J. Tracey, Health Officer.

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ROCKVILLE SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.6 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
129-3048	8- 5-13	2	27	40	1.6	.006	.070	.008	.03	4.2	17	1	0
129-3662	8-12-14	3	25	31	1.6	.000	.050	.000	.00	3.3	15	2	0
129-3757	9-29-14	5	35	36	1.6	.018	.110	.000	.00	4.5	19	595	+
	Average	3	32	35	1.6	.008	.076	.002	.01	4.0	17	199	

Samples collected by Dr. W. B. Bean, Health Officer.

SEYMOUR SUPPLY.

136-3419	3-17-14	0	30	28	2.0	.030	.060	.000	.03	2.6	17	1300	0
136-3460	4-16-14	1	30	50	1.8	.030	.060	.000	.00	1.8	13	44	0
136-3517	5-22-14	1	20	17	2.0	.006	.050	.000	.00	2.4	16	212	0
136-3600	7- 3-14	3	50	46	1.4	.030	.160	.000	.00	4.1	21	2900	0
136-3633	7-24-14	1	48	44	1.8	.030	.100	.000	.00	3.8	16	7000	0
136-3293	12-10-13	2	80	43	2.4	.006	.130	.000	.05	4.3	19	38	0
136-3381	2-10-14	1	35	31	2.2	.018	.080	.000	.05	3.6	24	1750	0
136-2599	10- 1-12	3	95	44	2.0	.018	.230	.000	.00	6.6	13	100	0
	Average	1	48	37	1.9	.021	.108	.000	.01	3.6	17	1668	

Samples collected by Frank G. Bassett, Health Officer.

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SHARON SUPPLY—CALKINSTOWN RESERVOIR.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.3 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
137-2608	10- 2-12	1	18	186	2.1	.018	.090	.000	.00	2.5	144	120	+
137-2957	6-13-13	0	13	140	1.4	.054	.080	.000	.04	1.2	121	1300	0
	Average	0	15	163	1.7	.036	.085	.000	.02	1.8	132	710	

BEARDSLEY RESERVOIR.

137-2609	10- 2-12	2	18	195	2.0	.036	.080	.001	.00	2.4	142	170	+
137-2833	3- 6-13	2	11	133	1.2	.036	.110	.000	.00	2.0	111	21	0
137-2860	4- 9-13	2	13	..	0.9	.018	.120	.000	.00	2.2	126	8	0
137-2958	6-13-13	0	18	207	1.0	.036	.080	.000	.03	2.7	100	840	0
	Average	1	15	178	1.2	.031	.097	.000	.00	2.3	119	259	

MCCANN RESERVOIR.

137-2834	3- 6-13	2	12	173	0.6	.030	.160	.000	.15	1.7	127	44	0

WHITFORD RESERVOIR.

137-2628	10- 8-12	10	18	99	1.8	.048	.090	.002	.40	0.4	89	550	+

Samples collected by the Sharon Water Co.

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SOUTHINGTON—DISTRIBUTING RESERVOIR.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.9 / Chlorine	AMMONIA / Free	AMMONIA / Albuminoid	NITROGEN AS / Nitrites	NITROGEN AS / Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
143-3131	9-11-13	2	45	36	1.8	.006	.090	.001	.02	3.2	14	2	+
143-3216	10-28-13	0	50	35	2.2	.000	.090	.000	.07	5.7	19	..	0
143-3260	11-14-13	1	45	52	2.2	.006	.080	.000	.04	2.0	19	50	0
143-3318	12-19-13	0	40	61	2.2	.000	.060	.000	.05	3.1	11	50	0
143-3349	1-16-14	1	30	38	2.6	.006	.060	.000	.02	1.9	15	322	0
143-3415	3-13-14	0	20	26	1.8	.030	.080	.000	.00	2.0	17	925	0
143-3470	4-21-14	2	15	23	2.8	.030	.190	.001	.00	3.6	16	28	0
143-3513	5-21-14	0	20	30	1.8	.012	.060	.000	.00	2.9	15	495	+
143-3580	6-26-14	1	25	33	1.8	.024	.060	.000	.00	2.8	18	390	0
143-3632	7-24-14	1	48	68	2.2	.030	.090	.000	.00	2.3	16	..	+
143-3674	8-18-14	0	45	43	1.8	.000	.030	.000	.00	3.3	16	..	0
143-3750	9-25-14	2	35	34	2.2	.018	.110	.000	.00	3.5	21	240	+
	Average	0	34	39	2.1	.013	.083	.000	.01	3.0	16	285	

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SOUTHINGTON—Old Storage Reservoir, No. 1.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.9 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
143-2631	10-11-12	8	47	55	2.2	.012	.240	.000	.00	3.8	11	500	0
143-2734	12-18-12	5	47	39	2.8	.006	.330	.000	.00	4.0	14	31	0
143-2775	1-21-13	1	28	38	1.8	.012	.140	.001	.04	4.1	14	17	0
143-2808	2-21-13	0	28	42	2.2	.006	.054	.000	.03	4.0	13	11	0
143-2853	4- 4-13	5	33	26	1.8	.012	.060	.000	.00	3.4	11	180	0
143-2884	4-24-13	3	32	29	1.6	.006	.080	.000	.01	3.6	11	26	0
143-2920	5-22-13	10	41	36	1.8	.042	.090	.000	.03	4.7	9	4	0
143-2952	6-11-13	2	39	25	2.0	.012	.250	.000	.03	5.4	10	36	0
143-3041	7-31-13	3	32	35	1.9	.012	.080	.003	.05	5.3	11	2	0
143-3100	8-28-13	1	45	39	1.5	.000	.060	.002	.03	3.9	15	50	0
143-3186	10-15-13	4	55	32	2.4	.012	.020	.001	.38	0.2	17	132	+
143-3259	11-14-13	2	65	55	1.6	.000	.090	.000	.05	4.9	20	80	0
143-3319	12-19-13	1	50	58	2.0	.000	.090	.000	.06	4.8	19	62	0
143-3350	1-16-14	1	45	35	1.8	.030	.080	.000	.03	2.4	17	137	0
143-3416	3-13-14	0	35	28	2.0	.030	.060	.000	.01	2.9	18	1225	0
	Average	3	41	38	1.9	.012	.114	.000	.05	3.8	13	166	0

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SOUTHINGTON—NEW STORAGE RESERVOIR, No. 2.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.9 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
143-2632	10-11-12	1	27	57	3.2	.030	.240	.000	.00	4.2	16	65	+
143-2735	12-18-12	5	11	31	3.7	.054	.260	.000	.15	3.0	15	59	0
143-2776	1-21-13	6	18	45	3.1	.012	.200	.001	.12	3.6	19	11	0
143-2809	2-21-13	6	14	52	3.6	.018	.190	.000	.07	3.9	18	18	0
143-2854	4- 4-13	15	15	39	2.8	.018	.080	.000	.03	2.7	16	120	0
143-2885	4-24-13	10	18	33	2.6	.006	.130	.000	.05	3.6	14	40	+
143-2921	5-22-13	10	25	37	2.4	.018	.140	.000	.01	5.0	14	10	0
143-2953	6-11-13	5	28	38	2.8	.030	.220	.000	.04	5.5	15	2	0
143-3402	7-31-13	3	20	36	2.7	.018	.090	.001	.02	4.4	19	23	0
143-3098	8-28-13	2	25	35	2.7	.030	.140	.002	.02	3.5	22	47	0
143-3469	4-21-14	1	20	39	1.8	.030	.060	.000	.00	2.5	13	190	0
143-3514	5-21-14	5	15	40	2.6	.006	.080	.000	.00	5.2	16	50	0
143-3579	6-26-14	2	20	48	2.2	.030	.190	.000	.00	4.3	21	160	0
143-3631	7-24-14	1	42	50	2.8	.000	.130	.000	.00	3.8	16	135	0
	Average	5	21	41	2.7	.021	.153	.000	.03	3.9	16	66	

Samples collected by the Southington Water Department.

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SOUTH NORWALK SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 6.5 Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCO_3$	Bacteria per c. c.	Colon Bacilli
144-2733	12-18-12	10	27	55	3.8	.012	.430	.000	.35	4.9	25	130	0
144-2778	1-21-13	0	18	50	3.2	.024	.180	.000	.16	3.9	29	3	0
144-2800	2-18-13	1	18	42	2.0	.006	.140	.000	.13	4.1	28	22	+
144-2843	3-17-13	0	15	52	3.0	.018	.090	.000	.08	2.9	29	15	0
144-3834	11- 4-14	0	15	80	2.2	.012	.110	.000	.35	2.0	26	17	0
	Average	2	18	55	2.8	.014	.190	.000	.21	3.5	27	37	

Samples collected by the South Norwalk Water Department.

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TERRYVILLE SUPPLY—RESERVOIR NO. 3.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.6 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
190-3421	3-23-14	0	30	45	1.6	.030	.060	.000	.02	4.5	17	107	0
190-3663	8-12-14	1	40	20	1.6	.006	.130	.000	.01	4.2	16	130	0
190-3684	8-24-14	3	35	50	1.6	.006	.090	.000	.00	4.5	11	1400	+
	Average	1	35	38	1.6	.014	.093	.000	.01	4.4	14	545	

MISCELLANEOUS SAMPLES.

190-2933	6- 2-13	3	13	47	2.1	.018	.110	.000	.01	1.8	17	850	0
190-3434	3-25-14	1	1	35	1.8	.018	.050	.000	.04	2.3	20	422	0

Samples collected by the Terryville Water Co.

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TORRINGTON SUPPLY.

Untreated Water.

Laboratory No.	Date	Bacteria per c. c.	Colon Bacilli	Laboratory No.	Date	Bacteria per c. c.	Colon Bacilli
158-2639	10/17/12	46	0	158-3296	12/11/13	550	+
158-2669	11/12/12	1,000	+	158-3342	1/13/14	237	0
158-2770	1/17/13	46	+	158-3386	2/11/14	282	0
158-2801	2/18/13	65	+	158-3427	3/24/14	205	0
158-2825	3/15/15	400	+	158-3473	4/23/14	750	+
158-2886	4/25/13	5,200	0	158-3519	5/26/14	3,050	+
158-2927	5/29/13	330	+	158-3587	7/ 1/14	3,650	+
158-2959	6/13/13	280	0	158-3641	7/28/14	27,250	+
158-3019	7/17/13	17	0	158-3710	9/ 4/14	21,400	0
158-3093	8/26/13	39	+	158-3759	9/29/14	....	+
158-3150	9/24/13	1,625	+				
158-3194	10/17/13	1,365	+		Average	3,126	
158-3250	11/12/13	1,000	0				

TORRINGTON SUPPLY.

Treated Water.

158-2640	10/17/12	17	0	158-2888	4/25/13	..	0
158-2641	10/17/12	18	0	158-2889	4/25/13	65	0
158-2642	10/17/12	14	0	158-2890	4/25/13	22	0
158-2643	10/17/12	14	0	158-2928	5/29/13	1	0
158-2670	11/12/12	60	0	158-2929	5/29/13	9	0
158-2671	11/12/12	80	0	158-2930	5/29/13	11	0
158-2672	11/12/12	140	+	158-2931	5/29/13	43	0
158-2673	11/12/12	38	+	158-2960	6/13/13	8	0
158-2744	12/27/12	4	0	158-2961	6/13/13	0	0
158-2745	12/27/12	14	0	158-2962	6/13/13	70	0
158-2746	12/27/12	13	0	158-2963	6/13/13	14	0
158-2747	12/27+12	11	0	158-3020	7/17/13	25	0
158-2748	12+27/12	18	0	158-3021	7/17/13	0	0
158 2771	1/17/13	7	0	158-3022	7/17/13	22	0
158-2772	1/17/13	9	0	158-3023	7/17/13	7	0
158-2773	1/17/13	5	0	158-3094	8/26/13	13	+
158-2802	2/18/13	10	0	158-3095	8/26/13	50	+
158-2803	2/18/13	10	0	158-3096	8/26/13	61	+
158-2804	2/18/13	6	0	158-3151	9/23/13	12	0
158-2805	2/18/13	14	0	158-3152	9/23/13	81	0
158-2826	3/ 6/13	15	0	158-3153	9/23/13	617	0
158-2827	3/ 6/13	16	0	158-3154	9/23/13	58	0
158-2828	3/ 6/13	20	0	158-3195	10/17/13	160	+
158-2829	3/ 6/13	13	0	158-3196	10/17/13	120	+
158-2887	4/25/13	10	0	158-3197	10/17/13	25	+

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TORRINGTON SUPPLY.

Treated Water.—Continued.

Laboratory No.	Date	Bacteria per c. c.	Colon Bacilli	Laboratory No.	Date	Bacteria per c. c.	Colon Bacilli
158-3198	10/17/13	215	+	158-3518	5/26/14	185	0
158-3251	11/12/13	25	0	158-3520	5/26/14	11	0
158-3252	11/12/13	30	0	158-3521	5/26/14	14	0
158-3253	11/12/13	20	0	158-3522	5/26/14	20	0
158-3254	11/12/13	32	0	158-3588	7/ 1/14	465	0
158-3297	12/11/13	27	0	158-3589	7/ 1/14	575	0
158-3298	12/11/13	21	0	158-3590	7/ 1/14	175	0
158-3299	12/11/13	21	0	158-3591	7/ 1/14	215	0
158-3300	12/11/13	41	0	158-3642	7/28/14	1,300	0
158-3343	1/ 3/14	1,300	0	158-3643	7/28/14	215	0
158-3344	1/ 3/14	130	0	158-3644	7/28/14	2,800	0
158-3345	1/ 3/14	164	0	158-3645	7/28/14	437	0
158-3346	1/ 3/14	190	0	158-3709	9/ 4/14	4,500†	0
158-3387	2/11/14	19	0	158-3711	9/ 4/14	2,200†	0
158-3388	2/11/14	16	0	158-3712	9/ 4/14	2,500†	0
158-3428	3/24/14	112	0	158-3713	9/ 4/14	6,200†	0
158-3429	3/24/14	26	0	158-3758	9/29/14	28	0
158-3430	3/24/14	77	0	158-3760	9/29/14	11,550‡	0
158-3431	3/24/14	435	0	158-3761	9/29/14	180	0
158-3474	4/23/14	53	0	158-3762	9/29/14	200	0
158-3475	4/23/14	56	0				
158-3476	4/23/14	170	0		Average	139	
158-3477	4/23/14	73	0				

†These counts not incuded in the average, as the sampes were shipped without ice, thus allowing growth during transportation.

‡This count not included in the average; error in plating.

Samples collected by Dr. Geo. Streit, Health Officer.

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WATERBURY—East Mountain System.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.0 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
166-2821	3- 5-13	0	3	29	1.8	.018	.230	.001	.09	0.5	11	14	+
166-2820	3- 5-13	20	16	47	2.7	.012	.240	.001	.05	2.5	18	21	+
166-2905	5-14-13	15	17	34	2.1	.012	.140	.000	.03	2.8	17	90	0
166-3014	7-16-13	2	27	51	2.5	.036	.020	.007	.04	2.0	21	..	
166-3102	8-28-13	0	15	51	2.4	.018	.070	.001	.02	0.4	25	19	0
166-3013	7-16-13	2	25	45	2.4	.036	.020	.001	.02	2.5	19	15	0
166-3104	8-28-13	0	20	66	2.0	.012	.100	.001	.00	2.8	21	56	0
166-3221	10-29-13	0	0	42	2.2	.000	.180	.000	.00	1.6	20	125	0
166-3229	10-31-13	5	40	53	2.9	.054	.600	.000	.10	2.9	23	2370	+
166-3363	1-30-14	1	0	70	2.8	.048	.090	.000	.10	2.5	19	2600	0
166-3362	1-30-14	1	1	65	2.4	.048	.140	.000	.03	3.7	17	1950	0
166-3397	2-24-14	0	35	34	2.6	.036	.080	.000	.02	3.2	22	29	0
166-3396	2-24-14	0	35	37	2.4	.036	.080	.000	.02	3.3	20	43	0
166-3450	4- 8-14	0	20	43	1.2	.018	.060	.000	.11	2.8	16	170	0
166-3464	4-16-14	3	10	35	2.4	.036	.060	.001	.13	1.1	21	322	0
166-3536	6- 4-14	1	10	45	1.8	.030	.060	.000	.00	2.2	16	387	0
166-3594	7- 1-14	3	20	48	2.2	.030	.080	.000	.00	1.3	21	375	+
166-3675	8-18-14	0	40	40	2.4	.000	.060	.000	.00	3.7	16	537	0
166-3690	8-25-14	1	15	73	2.2	.012	.090	.000	.00	2.1	23	525	0
	Average	2.8	18	47	2.2	.025	.126	.000	.04	2.3	19	536	

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WATERBURY—WIGWAM RESERVOIR.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.0 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
166-2604	10- 2-12	10	27	39	1.8	.054	.150	.000	.00	3.3	17	37	0
166-2605	10- 2-12	25	35	36	1.6	.012	.180	.000	.00	4.1	17	47	0
166-2813	3- 3-13	25	18	51	1.4	.012	.180	.000	.13	3.6	25	45	+
166-2901	5- 8-13	55	32	40	1.6	.030	.130	.000	.10	3.7	24	20	+
166-2902	5- 8-13	10	19	40	1.6	.030	.130	.000	.10	3.1	24	6	0
166-3016	7-16-13	4	27	43	1.2	.048	.030	.003	.03	3.2	28	3	0
166-3101	8-28-13	1	20	42	1.7	.000	.050	.001	.02	1.5	27	40	0
166-3220	10-29-13	2	55	38	1.8	.000	.100	.000	.06	4.0	30	3500	0
166-3306	12-16-13	0	48	47	2.0	.000	.120	.000	.09	5.8	24	28	0
166-3364	1-30-14	0	40	56	2.0	.030	.080	.000	.11	4.0	27	825	+
166-3395	2-24-14	0	40	33	1.6	.030	.080	.000	.17	4.2	24	79	0
166-3399	2-25-14	0	45	35	2.2	.030	.080	.000	.15	3.7	25	99	0
166-3451	4- 8-14	0	30	57	1.4	.030	.080	.000	.11	3.7	17	190	0
166-3535	6- 4-14	0	18	42	1.4	.006	.050	.000	.06	3.0	21	56	0
166-3676	8-18-14	0	15	50	2.0	.000	.030	.000	.00	2.1	24	322	0
	Average	8	31	43	1.6	.020	.098	.000	.07	3.5	23	353	

Digitized by Google

WATERBURY—Prospect Reservoir.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.0 / Chlorine	AMMONIA: Free	AMMONIA: Albuminoid	NITROGEN AS: Nitrites	NITROGEN AS: Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
166-2822	3- 5-13	4	17	49	2.8	.006	.520	.000	.08	4.2	17	17	0
166-3012	7-16-13	3	29	37	2.5	.084	.130	.006	.04	4.0	16	10	0
166-3103	8-28-13	0	30	45	2.4	.024	.140	.000	.02	3.1	20	31	0
166-3226	10-30-13	2	45	30	2.6	.018	.130	.000	.04	4.8	23	480	+
166-3226	12-23-13	3	45	68	2.4	.006	.090	.000	.01	4.9	20	387	0
166-3465	4-15-14	5	35	30	1.6	.012	.080	.000	.04	3.1	17	72	0
166-3593	7- 1-14	0	35	51	2.8	.048	.160	.000	.00	4.5	18	54	0
166-3689	8-25-14	2	30	45	2.4	.018	.290	.000	.00	5.7	16	650	+
	Average	2	44	44	2.4	.027	.190	.000	.02	4.2	18	212	

Samples collected by the Waterbury Water Dept.

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WATERTOWN SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 1.7 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
168-2666	11- 8-12	3	48	117	4.2	.012	.320	.000	.25	9.8	50	1900	0
168-2785	1-29-13	3	38	46	1.8	.006	.360	.000	.19	5.5	24	..	0
168-2864	4-10-13	1	46	56	2.0	.006	.200	.000	.05	6.5	25	100	0
168-3234	11- 5-13	0	70	57	2.0	.006	.180	.001	.10	10.7	31	195	0
	Average	1	50	69	2.5	.007	.265	.000	.14	8.1	32	731	

Samples collected by Dr. J. S. Martin, Health Officer.

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WILLIMANTIC CITY SUPPLY.

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.1 Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
175-2614	10- 2-12	1	46	50	2.7	.073	.050	.000	.00	5.2	19	28	0
175-2663	11- 6-12	0	43	59	3.4	.012	.160	.000	.00	6.7	21	280	+
175-2743	12-26-12	3	47	47	2.4	.006	.080	.000	.00	6.3	22	60	+
175-2777	1-21-13	5	37	42	1.9	.006	.130	.000	.08	4.7	17	65	+
175-2788	2- 4-13	2	28	32	2.4	.006	.330	.000	.09	4.2	18	180	0
175-2817	3- 4-13	2	32	31	2.2	.006	.160	.000	.08	4.0	16	140	+
175-2883	4-22-13	1	42	30	2.0	.012	.080	.000	.04	4.7	19	130	+
175-2926	5-27-13	3	88	49	2.0	.036	.100	.000	.00	10.3	19	..	0
175-2942	6- 5-13	0	74	48	1.6	.036	.230	.000	.07	7.9	17	55	0
175-3032	7-22-13	0	40	42	2.2	.066	.130	.003	.01	4.1	24	6	0
175-3088	8-21-13	3	35	51	2.2	.000	.070	.000	.00	2.8	25	6	0
175-3125	9-10-13	2	40	48	2.2	.030	.090	.000	.00	7.9	32	62	0
175-3208	10-22-13	0	60	64	3.6	.000	.060	.001	.11	5.6	29	1200	+
175-3257	11-13-13	1	80	86	3.2	.030	.100	.000	.06	7.3	17	550	0
175-3327	12-24-13	1	40	52	2.2	.000	.060	.000	.09	4.2	19	625	0
175-3334	1- 6-14	0	45	45	2.2	.000	.070	.000	.05	0.1	21	387	0

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WILLIMANTIC CITY SUPPLY—(Continued).

Laboratory No.	Date	Turbidity	Color	Total Solids	Normal Chlorine 2.8 / Chlorine	AMMONIA Free	AMMONIA Albuminoid	NITROGEN AS Nitrites	NITROGEN AS Nitrates	Oxygen Consumed	Total Hardness as $CaCo_3$	Bacteria per c. c.	Colon Bacilli
175-3398	2-24-14	0	35	48	2.8	.012	.060	.000	.08	3.7	22	140	0
175-3432	3-24-14	0	30	37	2.2	.012	.060	.000	.07	3.7	22	220	0
175-3457	4- 9-14	0	40	35	2.0	.030	.080	.000	.11	4.3	16	255	0
175-3515	5-21-14	2	45	52	1.6	.030	.060	.000	.02	5.6	23	282	0
175-3573	6-24-14	2	48	64	1.6	.042	.080	.000	.00	3.9	23	205	0
175-3617	7-15-14	3	50	65	1.8	.030	.090	.000	.00	5.2	24	155	0
175-3664	8- 3-14	0	40	61	2.6	.006	.050	.000	.00	4.4	21	165	0
175-3751	9-28-14	1	30	50	1.6	.030	.080	.000	.00	4.0	23	300	0
	Average	1	45	49	2.2	.021	.102	.000	.04	5.0	21	238	

Samples collected by the Willimantic Water Dept.

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TABLE LIV.

Number of Examinations of Public Water Supplies Not Included in Tables

Towns.	No.	Towns.	No.
Ansonia	1	Ridgefield	3
Baltic	3	Sharon	2
Branford	1	Simsbury	1
Chester	1	Southington	3
Danbury	5	South Manchester	2
Danielson	2	South Windsor	2
Darien	3	Stonington	1
Enfield	1	Terryville	2
Essex	1	Thompsonville	1
Granby	1	Wallingford	1
Litchfield	2	Waterbury	4
Madison	1	Westport	1
Manchester	2	Willimantic	1
Middletown	1	Winchester	2
Milford	1	Windsor	1
Naugatuck	4	Windsor Locks	2
New Canaan	5	Winsted	2
Newtown	2	Woodbury	1
Norfolk	1	Woodstock	1
Norwich	5		
Pomfret	1	Total	79
Putnam	2		

TABLE LV.

Number of Examinations of Water from Wells.

Towns.	No.	Towns.	No.
Allyn's Point	1	Collinsville	1
Andover	3	Danbury	3
Avon	2	Danielson	2
Barkhamsted	1	Darien	3
Beacon Falls	2	Derby	2
Bethlehem	3	East Berlin	1
Bloomfield	2	East Haddam	1
Bolton	1	East Hampton	3
Bozrah	1	Easton	1
Branford	2	East Windsor	2
Bridgeport	1	Elmwood	1
Bristol	8	Essex	2
Broad Brook	1	Falls Village	1
Brookfield Center	1	Glastonbury	1
Central Village	1	Greenwich	2
Chaplin	1	Griswold	1
Chester	1	Groton	7
Colebrook	1	Hamden	1

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Number of Examinations of Water from Wells.—Continued.

Towns.	No.	Towns.	No.
Hampton	1	Ridgefield	2
Hartford	1	Rockfall	1
Harwinton	1	Salisbury	1
Huntington	2	Saybrook	1
Jewett City	1	Seymour	10
Lebanon	2	Shelton	3
Lyme	1	Simsbury	1
Madison	1	Somerville	1
Mansfield	8	Sprague	1
Meriden	1	Stamford	4
Middlebury	3	Stonington	6
Midlletown	4	Stratford	2
Milford	1	Suffield	3
Montville	5	Terryville	8
Moosup	3	Thomaston	2
Morris	1	Thompson	1
Mystic	1	Tolland	1
Naugatuck	1	Torrington	1
New Fairfield	4	Trumbull	1
New Haven	3	Vernon	2
New London	2	Voluntown	2
New Preston	1	Waterbury	11
Newtown	4	Waterford	4
Niantic	2	Watertown	4
Norwalk	7	Westbrook	9
Norwich	14	West Haven	1
Old Lyme	3	Wethersfield	1
Old Saybrook	1	Westport	1
Oxford	1	Willimantic	9
Plainfield	2	Wilton	11
Plymouth	2	Woodbridge	1
Pomfret	3	Woodbury	2
Portland	4	Woodstock	2
Preston	1		
Putnam	1	Total	272
Redding	1		

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TABLE LVI.

Number of Examinations of Water from Springs.

Towns.	No.	Towns.	No.
Ansonia	1	Plymouth	1
Avon	2	Ridgefield	1
Beacon Falls	1	Seymour	2
Branford	1	Simsbury	1
Bristol	2	Southington	1
Brooklyn	2	Stafford Springs	1
Chester	1	Stonington	2
Danielson	1	Suffield	1
Derby	1	Terryville	1
Glastonbury	1	Wallingford	1
Hampton	1	Waterbury	4
Huntington	3	Watertown	1
Jewett City	1	West Cornwall	1
Litchfield	1	Willimantic	4
Manchester	1	Wilton	1
Middletown	2	Windsor Locks	1
Montville	2	Winsted	1
Morris	1		
New Fairfield	1	Total	53
Norwich	2		

TABLE LVII.

Number of Examinations of Water for a License to Sell in Accordance with the Law Enacted by the Legislature During 1913.

Towns.	No.	Towns.	No.
Ansonia	2	Norwalk	1
Beacon Falls	2	Oxford	1
Bethel	1	Sharon	3
Bridgeport	2	Shelton	1
Danbury	6	Stafford Springs	1
Fairfield	1	Stamford	?
Groton	3	Stonington	1
Guilford	1	Stratford	1
Hartford	1	Suffield	2
Higganum	3	Torrington	2
Highland Park	1	Wallingford	1
Kensington	2	*Westerly, R. I.	1
Meriden	3	Wethersfield	1
Middletown	5	Willimantic	1
Milford	2	Windsor	1
Montowese	3	Woodbridge	1
New Britain	3	Woodmont	2
New Haven	3		
Norwich	3	Total	71

*The water is sold in this state.

In addition to the number of analyses as shown by the above tables, eighty-one miscellaneous samples of water have been examined.

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TESTING OF SWIMMING POOLS.

The efficiency of chloride of lime and of liquid chlorine in sterilizing bodies of water is beginning to be utilized for the purification of the water in swimming pools. In some places by the use of chloride of lime and filtering the water through a mechanical filter, the same water has been used in the swimming pool month after month for years without difficulty. This Laboratory has been called upon in the last two years to test the efficiency of the chloride of lime treatment in swimming pools. Two swimming pools in Middletown and two in the city of Waterbury have been thus tested, a succession of tests being made in each case until it was determined that the treatment was efficient in destroying bacteria, particularly the colon bacillus. The results of these experiments have shown that when either chloride of lime or liquid chlorine is used in such tanks in proper quantities, the sterilization of the water is nearly complete, and at all events all dangerous organisms, such as are indicated by the presence of colon, are destroyed. There is no difficulty, in this way, in keeping the water in a pure condition for use for a long time, thus saving the difficulty and also the expense incurred of frequently filling the swimming tank with a new water supply.

TABLE LVIII.

Bactriological Examinations of Water from the Swimming-pool of the Boys' Club of Waterbury.

No.	Date	Bacteria per c. c.	Colon Bacilli	Remarks
1	5/ 9/14	16,150	0	Sample No. 1 was taken from filtered water at inlet.
2	5/ 9/14	9,700	0	Sample No. 2 was taken near outlet to filter. No disinfectant was being used at this time.
1	7/16/14	89	0	Sample No. 1 was taken farthest away from point where filtered water enters tank.
2	7/16/14	25	0	Sample No. 2 was taken near point where filtered water enters tank. The water was being disinfected by hypochlorite treatment at this time.

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TABLE LXIX.

Bacteriological Examinations of Swimming Pool at Wesleyan University.*

Date	Bacteria per c. c.	Colon Bacilli	Remarks
1/21/14	7,400	0	Pool had been in use a little over a week, no disinfectant being used at this time.
1/31/14	1,300	..	Pool had been refilled with fresh water and had been in use for three days.
1/31/14	11	..	This count was obtained from plates made twenty minutes after disinfection of the water by hypochlorite treatment, showing a removal of 99% of the bacteria.
2/ 3/14	26	..	Pool had been in use for three days after disinfection of the water by hypochlorite treatment.
3/ 7/14	0	..	This examination was made immediately after disinfection of the water by hypochlorite treatment.
9/27/14	24,250	0	This examination was made after one week in which the water was recirculated for five hours daily through the filters, otherwise it was not treated at this time.
9/29/14	0	..	This examination was made immediately after disinfection of the water by hypochlorite treatment.

At present the water of this pool is being treated twice a week with hypochlorite and by this means is kept practically sterile. From the above results it is evident that the hypochlorite treatment offers an efficient method of insuring a hygienic swimming pool.

*These samples are not included in the total number.

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ANALYSES OF SEWAGE FROM FILTER PLANTS.

The examination of the sewage from the filter plants has been continued during the past two years. The purpose of this is to determine the efficiency of the sewage plants, and in each case there has been received a sample of the untreated sewage and a sample of the effiuent sewage after treatment. A comparison of the two shows the efficiency of the plant at that particular time. The results of our examinations during the last two years have indicated that the filter beds in the State are very different in their efficiency. Some of them are extremely efficient, and produce an effluent that is perfectly clear and beyond criticism. Other filter plants, however, seem to be quite inefficient, and in some cases the treatment of the sewage by the filtration plant is almost useless.

NUMBER OF EXAMINATIONS OF SEWAGE AND SEWAGE WORKS EFFLUENTS.

Town	Samples of Sewage	Samples of Sewage Effluents
Bristol	8	8
Danbury	23	23
Meriden	18	18
New Britain	23	23
Total	72	72

The detailed results of these analyses are on file at the office of the Board of Health.

TESTS OF ILLUMINATING OILS.

Ninety-six samples of illuminating oil have been examined for the flash and fire tests in accordance with the law enacted by the Legislature during 1908, and the tests have in every case given results within the requirements of the law. These samples of oil have been obtained in Middletown and vicinity only as there is no provision at present for collection of samples from other parts of the State.

H. W. CONN, Director.

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DEPARTMENT OF PUBLIC HEALTH

STATE OF CONNECTICUT

STATE BOARD OF HEALTH.

	Term Expires
Albert W. Phillips, M. D., Derby	July 1, 1915
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Lewis Sperry, Attorney-at-Law, South Windsor	July 1, 1917
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COUNTY AND TOWN OFFICIALS AND HEALTH OFFICIALS OF THE CITIES AND BOROUGHS OF CONNECTICUT.

(Arranged in Alphabetical order by Counties.)

Town.	Name.	P. O. Address.
Hartford County	Daniel A. Markham	Hartford.
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New London County	Arthur M. Brown	Norwich.
Fairfield County	George E. Hill	Bridgeport.
Windham County	William A. King	Willimantic.
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HARTFORD COUNTY.

DANIEL A. MARKHAM, Esq., County Health Officer, Hartford.

Town.	Name.	P. O. Address.
AVON	V. H. C. Morse, M. D.	Simsbury.
BERLIN	G. P. Dunham, M. D.	Berlin.
BLOOMFIELD	G. F. Woodford	Bloomfield.
BRISTOL	H. D. Brennan, M. D.	Bristol.
BURLINGTON	John D. Luby	Bristol, R. F. D. No. 3.
CANTON	G. F. Lewis, M. D.	Collinsville.
EAST GRANBY	Frank H. Dibble	East Granby.
EAST HARTFORD	F. H. Mayberry, M. D.	East Hartford.
EAST WINDSOR	H. O. Allen, M. D.	Broad Brook.
ENFIELD	G. T. Finch, M. D.	Thompsonville.
FARMINGTON	Richard Blackmore, M.D.	Farmington.
GLASTONBURY	C. G. Rankin, M. D.	Glastonbury.
GRANBY	Wesley N. Clark	Granby.
HARTLAND	Edward A. Gaylord	Hartland.
MANCHESTER	D. C. Y. Moore, M. D.	South Manchester.
MARLBOROUGH	Wm. W. Bolles	Marlborough.
NEWINGTON	John S. Kirkham	Newington.
PLAINVILLE	J. N. Bull, M. D.	Plainville.
ROCKY HILL	F. L. Burr, M. D.	Rocky Hill.
SIMSBURY	W. R. Munson, M. D.	Tariffville.
SOUTHINGTON	W. G. Steadman, M. D.	Southington.
SOUTH WINDSOR	H. A. Deane, M. D.	R. F. D., Burnside.
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WEST HARTFORD	F. H. Stadtmueller	Elmwood.
WETHERSFIELD	E. G. Fox, M. D.	Wethersfield.
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WINDSOR LOCKS	J. A. Coogan, M. D.	Windsor Locks.

CITY HEALTH OFFICERS.

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NEW BRITAIN	T. E. Reeks, M. D.

BOROUGH HEALTH OFFICERS.

BRISTOL	H. D. Brennan, M. D.
SOUTHINGTON	W. G. Steadman, M. D.

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NEW HAVEN COUNTY.

CHARLES W. EVARTS, Esq., County Health Officer, New Haven.

Town.	Name.	P. O. Address.
BEACON FALLS	Chas. D. Roberts	Beacon Falls.
BETHANY	S. G. Davidson	Bethany.
BRANFORD	C. W. Gaylord, M. D.	Branford.
CHESHIRE	C. N. Denison, M. D.	Cheshire.
EAST HAVEN	E. C. M. Hall, M. D.	New Haven.
GUILFORD	R. B. West, M. D.	Guilford.
HAMDEN	Geo. H. Joslin, M. D.	Mount Carmel.
MADISON	M. P. Rindge, M. D.	Madison.
MERIDEN	E. A. Wilson, M. D.	Meriden.
MIDDLEBURY	F. S. Chamberlain	Middlebury.
MILFORD	W. S. Putney, M. D.	Milford.
NAUGATUCK	W. A. Reilly, M. D.	Naugatuck.
NORTH BRANFORD	I. E. Brainard, M. D.	Wallingford.
NORTH HAVEN	R. W. Nichols, M. D.	North Haven.
ORANGE	C. A. Bevan, M. D.	West Haven.
OXFORD	G. W. Cable	Oxford.
PROSPECT	S. A. Talmadge	Prospect.
SEYMOUR	F. G. Bassett	Seymour.
SOUTHBURY	Wm. H. Wakelee	Southbury, R. F. D. No. 1
WALLINGFORD	W. P. Wilson, M. D.	Wallingford.
WOLCOTT	J. H. Garrigus	Waterbury, R. F. D. No. 1
WOODBRIDGE	LeRoy C. Beecher	Westville, R. F. D. No. 1.

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DERBY	E. O'R. McGuire, M. D.
MERIDEN	L. F. Wheatley, M. D.
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WATERBURY	T. J. Kilmartin, M. D.

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GUILFORD	R. B. West, M. D.
WALLINGFORD	Wm. P. Wilson, M. D.

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NEW LONDON COUNTY.

ARTHUR M. BROWN, Esq., County Health Officer, Norwich.

Town.	Name.	P. O. Address.
BOZRAH	Geo. Elmer Lamphere	Fitchville.
COLCHESTER	J. M. Klein, M. D.	Colchester.
EAST LYME	R. H. Dart, M. D.	Niantic.
FRANKLIN	J. Henry King	Yantic, R. F. D. No. 2.
GRISWOLD	G. H. Jennings, M. D.	Jewett City.
GROTON	A. M. Purdy, M. D.	Mystic.
LEBANON	E. L. Danielson, M. D.	Lebanon.
LEDYARD	J. A. Stoddard	Gales Ferry, R.F.D.No.1
LISBON	Chas. D. Wolf	Jewett City.
LYME	J. G. Ely, M. D.	Hamburgh.
MONTVILLE	M. E. Fox, M. D.	Uncasville.
NORTH STONINGTON	R. E. Harrington, M. D.	North Stonington.
NORWICH	Geo. Thompson, M. D.	Taftville.
OLD LYME	E. K. Devitt, M. D.	Lyme.
PRESTON	A. D. Zabriske	Norwich, R. F. D. No. 3.
SALEM	J. M. Klein, M. D.	Colchester.
SPRAGUE	L. J. Fontaine	Baltic
STONINGTON	C. F. Congdon, M. D.	Mystic.
VOLUNTOWN	John H. Hoover, M. D.	Voluntown.
WATERFORD	G. M. Minor, M. D.	Waterford.

CITY HEALTH OFFICERS.

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NORWICH	N. B. Lewis, M. D.

BOROUGH HEALTH OFFICERS.

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GROTON	F. W. Hewes, M. D.
JEWETT CITY	G. H. Jennings, M. D.
STONINGTON	C. F. Congdon. M. D.

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FAIRFIELD COUNTY.

GEORGE E. HILL, Esq., County Health Officer, Bridgeport.

Town.	Name.	P. O. Address.
DANBURY	G. E. Lemmer, M. D.	Danbury.
BETHEL	Dr. H. Frank Moore	Bethel.
BROOKFIELD	F. S. Curtis	Brookfield Center.
DARIEN	G. H. Noxon, M. D.	Darien.
EASTON	G. B. Beers	Bridgeport, R.F.D. No. 1
FAIRFIELD	Valery Havard, M. D.	Fairfield.
GREENWICH	A. W. Klein, M. D.	Greenwich.
HUNTINGTON	W. S. Randall, M. D.	Shelton.
MONROE	S. B. Hayes	Stepney.
NEW CANAAN	E. J. O'Saughnessy, M.D.	New Canaan.
NEW FAIRFIELD	W. S. Watson, M. D.	Danbury.
NEWTOWN	W. H. Kiernan, M. D.	Sandy Hook.
NORWALK	W. J. Tracey, M. D.	Norwalk.
REDDING	H. P. Mansfield. M. D.	Ridgefield.
RIDGEFIELD	R. W. Lowe, M. D.	Ridgefield.
SHERMAN	N. T. Hungerford	Gaylordsville, R.F.D. 1.
STAMFORD	R. W. Crane, M. D.	Stamford.
STRATFORD	G. F. Lewis, M. D.	Stratford.
TRUMBULL	E. S. Fairchild	Nichols.
WESTON	F. Gorham, M. D.	Westport, R. F. D.
WESTPORT	F. Powers, M. D.	Westport.
WILTON	Thos. F. Scanlon, M. D.	Georgetown.

CITY HEALTH OFFICERS.

BRIDGEPORT	E. A. McLellan, M. D.
DANBURY	G. E. Lemmer, M. D.
NORWALK	W. J. Tracey, M. D.
STAMFORD	E. Everett Rowell, M. D.

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GREENWICH	A. W. Klein, M. D.
NEW CANAAN	E. J. O'Shaughnessy, M. D.
RIDGEFIELD	R. W. Lowe, M. D.
SHELTON	G. A. Shelton, M. D.

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WINDHAM COUNTY.

WILLIAM A. KING, Esq., County Health Officer, Willimantic.

Town.	Name.	P. O. Address.
BROOKLYN	E. C. Babson	Danielson.
ASHFORD	Geo. O. Balch	Warrenville.
CANTERBURY	J. O. Smith, M. D.	So. Canterbury, R.F.D. 1.
CHAPLIN	F. C. Lummis	Chaplin.
EASTFORD	H. H. Converse, M. D.	Eastford.
HAMPTON	A. D. Marsh, M. D.	Hampton.
KILLINGLY	W. H. Judson, M. D.	Danielson.
PLAINFIELD	A. A. Chase, M. D.	Plainfield.
POMFRET	C. O. Thompson	Pomfret Center.
PUTNAM	Omer LaRue, M. D.	Putnam.
SCOTLAND	A. H. Gallup	Scotland.
STERLING	O. W. Bates	Oneco.
THOMPSON	G. W. H. Williams, M.D.	No. Grosvenordale.
WINDHAM	F. E. Wilcox, M. D.	Willimantic.
WOODSTOCK	Joseph Spalding, M. D.	Woodstock.

CITY HEALTH OFFICERS.

PUTNAM	L. O. Morasse, M. D.
WILLIMANTIC	W. P. S. Keating, M. D.

BOROUGH HEALTH OFFICERS.

DANIELSON	W. H. Judson, M. D.

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LITCHFIELD COUNTY.

WM. W. BIERCE, Esq., County Health Officer, Torrington.

Town.	Name.	P. O. Address.
LITCHFIELD	C. I. Page, M. D.	Litchfield.
BARKHAMSTED	Herbert Case	Barkhamsted.
BETHLEHEM	E. Irving Stone	Bethlehem.
BRIDGEWATER	R. S. Day, M. D.	New Milford.
CANAAN	F. S. Skiff, M. D.	Falls Village.
COLEBROOK	H. L. Culver	Winsted, R. F. D. No. 1.
CORNWALL	R. Grand-Lienard, M. D.	West Cornwall.
GOSHEN	J. H. North, M. D.	Goshen.
HARWINTON	W. J. Barber	Campville.
KENT	E. W. Bull	Kent.
MORRIS	L. W. Whittlesey	Morris.
NEW HARTFORD	F. P. Marble	New Hartford.
NEW MILFORD	J. C. Barker, M. D.	New Milford.
NORFOLK	I. L. Hamant, M. D.	Norfolk.
NORTH CANAAN	F. H. Lee, M. D.	Canaan.
PLYMOUTH	R. J. Lawton, M. D.	Terryville.
ROXBURY	E. D. Russell, M. D.	Roxbury.
SALISBURY	W. B. Bissell, M. D.	Lakeville.
SHARON	C. W. Bassett, M. D.	Sharon.
THOMASTON	J. H. Kane, M. D.	Thomaston.
TORRINGTON	George Streit, M. D.	Torrington.
WARREN	Wm. Forestelle	Warren.
WASHINGTON	H. G. Stevens, M. D.	New Preston.
WATERTOWN	J. S. Martin, M. D.	Watertown.
WINCHESTER	S. G. Howd, M. D.	Winsted.
WOODBURY	H. S. Allen, M. D.	Hotchkissville.

BOROUGH HEALTH OFFICERS.

LITCHFIELD	C. I. Page, M. D.
TORRINGTON	George Streit, M. D.
WINSTED	S. C. Wheeler.

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MIDDLESEX COUNTY.

WESLEY U. PEARNE, Esq., County Health Officer, Middletown.

Town.	Name.	P. O. Address.
MIDDLETOWN	J. H. McDougall, M. D.	Middletown.
CHATHAM	G. N. Lawson, M. D.	Middle Haddam.
CHESTER	F. Summer Smith, M.D.	Chester.
CLINTON	H. S. Reynolds, M. D.	Clinton.
CROMWELL	C. E. Bush, M. D.	Cromwell.
DURHAM	E. A. Markham, M. D.	Durham.
EAST HADDAM	M. W. Plumstead, M. D.	East Haddam.
ESSEX	F. B. Bradeen, M. D.	Essex.
HADDAM	LeR. A. Smith, M. D.	Higganum.
KILLINGWORTH	H. S. Reynolds, M. D.	Clinton.
MIDDLEFIELD	J. E. Bailey, M. D.	Middletown.
OLD SAYBROOK	Irwin Graniss, M. D.	Saybrook.
PORTLAND	F. E. Potter, M. D.	Portland.
SAYBROOK	H. T. French, M. D.	Deep River.
WESTBROOK	E. J. Lyman, M. D.	Westbrook.

CITY HEALTH OFFICERS.

MIDDLETOWN ..... T. P. Walsh, M. D.

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TOLLAND COUNTY.

M. D. O'CONNELL, Esq., County Health Officer, Stafford Springs.

Town.	Name.	P. O. Address.
TOLLAND	C. S. Hurlbut	Rockville, R. F. D. No. 4
ANDOVER	S. L. French	Andover.
BOLTON	J. White Sumner	Bolton.
COLUMBIA	R. L. Cobb	Columbia.
COVENTRY	W. L. Higgins, M. D.	So. Coventry.
ELLINGTON	E. A. Brace, M. D.	Ellington.
HEBRON	C. H. Pendleton, M. D.	Hebron.
MANSFIELD	W. E. Cramm, M. D.	Mansfield Center.
SOMERS	A. L. Hurd, M. D.	Somers.
STAFFORD	F. L. Smith, M. D.	Stafford Springs.
UNION	A. M. Heck	Stafford Springs, R.F.D.2
VERNON	E. P. Flint, M. D.	Rockville.
WILLINGTON	F. B. Converse, M. D.	West Willington.

CITY HEALTH OFFICERS.

ROCKVILLE	W. B. Bean, M. D.

BOROUGH HEALTH OFFICERS.

STAFFORD SPRINGS	J. R. Parkhurst.

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EXAMINING BOARDS OF THE STATE MEDICAL SOCIETIES.

BOARD OF THE CONNECTICUT MEDICAL SOCIETY.

Name.	Address.	Term Expires.
Dr. C. A. Tuttle, Sec'y	New Haven	January 1916.
Dr. S. M. Garlick	Bridgeport	January 1917.
Dr. J. B. McCook	Hartford	January 1918.
Dr. J. F. Calef	Middletown	January 1919.
Dr. F. G. Hyde	Greenwich	January 1920.

BOARD OF THE CONNECTICUT HOMEOPATHIC MEDICAL SOCIETY.

Name.	Address.	Term Expires.
Dr. E. H. Linnell	Norwich	January 1916.
Dr. W. P. Baldwin	New Haven	January 1917.
Dr. Frederick Wilcox	Willimantic	January 1918.
Dr. H. A. Roberts	Derby	January 1919.
Dr. E. C. M. Hall, Sec'y	New Haven	January 1920.

BOARD OF THE CONNECTICUT ECLECTIC MEDICAL ASSOCIATION.

Name.	Address.	Term Expires.
Dr. E. A. Markham	Durham	January 1916.
Dr. James E. Hair	Bridgeport	January 1917.
Dr. T. S. Hodge, Sec'y.	Torrington	January 1918.
Dr. E. H. Marsh	Mansfield Center	January 1919.
Dr. John W. Fyfe	Saugatuck	January 1920.

CONNECTICUT MIDWIFERY EXAMINING BOARD.

Name.	Address.	Term Expires.
Dr. J. F. Calef	Middletown	August 1917.
Dr. E. C. M. Hall, Sec'y	New Haven	August 1917.
Dr. J. E. Hair	Bridgeport	August 1917.

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ALPHABETICAL LIST.

(Continued from last report.)

Of the Medical Practitioners in Connecticut who, in compliance with the Medical Practice Act have registered in the office of the State Board of Health between October 1, 1912, and October 1, 1914.

Where no post office address is given, it is understood to be the place where registered.

Name.	Where Registered.	P. O. Address.
Aaronson, Michael S.	Ansonia.	
Allen, David E.	New Haven.	
Anderson, Peyton F.	Huntington	Shelton.
Apfelberg, Isidor	Greenwich	New York, N. Y.
Aranki, Salamch I.	New Haven.	
Banks, Daniel T.	Salisbury	Albion, N. Y.
Barker, James C.	New Haven.	
Beaudry, Joseph H.	Bridgeport.	
Blance, Clarke.	Norwich.	
Bradley, Theron R.	Norwalk.	
Bransfield, John W.	Portland.	
Bringman, Mark S.	Norwich.	
Brown, Harold M.	Hartford.	
Bull, William T.	Greenwich	New York, N. Y.
Campbell, Hugh B.	Norwich.	
Canavan, John F.	Hartford.	
Carter, Earle B.	Waterbury.	
Cheney, George P.	Willimantic.	
Colgan, Walter J.	Bridgeport.	
Comfort, Chas. W., Jr.	New Haven.	
Comstock, Fred W.	New Haven.	
Connors, Thomas J.	Huntington	Pittsfield, Mass.
Conte, Harry A.	New Haven.	
Cram, George F.	Norwalk.	
Crook, Joseph B.	Lyme.	
Crowley, Forrest G.	New Haven.	
Curtis, Alton K.	Killingly	Pawtucket, R. I.
Dalton, George H.	New Britain.	

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Name.	Where Registered.	P. O. Address.
Donohue, John D.	Norwich.	
Donohue, John J.	Norwich.	
Douglass, Walter L.	New London.	
Driscoll, William T.	Norwich.	
Dryfuss, Barney J.	Greenwich.	
Dye, John S.	Hartford.	
Elliott, Calvin H.	Hartford.	
Esposito, Joseph V.	New Haven.	
Finnegan, John H.	Bridgeport.	
Freeman, Albert C.	Enfield	Barre, Vt.
Frost, Lawrence H.	Willimantic.	
Flynn, John F.	Bridgeport.	
Fox, Peter W.	New Britain.	
Foley, Francis E.	New Haven.	
Friedman, Lewis J.	Bridgeport.	
Gardner, David M.	Milford.	
Garland, Robert B.	Hartford.	
Garlick, George B.	Bridgeport.	
Grand-Lienard, Robt. J.	New Haven.	
Greeley, Hugh P.	Simsbury.	
Green, Jacques H.	Waterbury.	
Griswold, Matthew H.	Berlin	Kensington.
Gesner, Frank E.	New Haven.	
Hance, Irwin H.	Greenwich	Lakewood, N. J.
Harbeck, Charles J.	Greenwich.	
Harris, Joseph E.	Wethersfield.	
Hartnett, John J.	Torrington.	
Heady, Carlton K.	Milford.	
Hennessey, Edw. H. J.	Ansonia.	
Herz, Lucius F.	New Haven.	
Hewitt, Alfred F.	Stamford.	
Hippolitus, Paul D.	New Haven.	
Hirata, Isao	New Haven.	
Hitchcock, Freeman St.C.	Greenwich.	
Horn, Isidore M.	New Haven.	
Horwitz, Morris T.	Bridgeport.	
Hynes, Fred H.	New Haven.	
Janvier, Florizel	Cheshire	
Johnson, Gertrude C.	Manchester	South Manchester.
Jones, Byron C.	Stamford.	
Kellogg, Henry K. W.	Norwalk.	
Kerney, Joseph E.	Greenwich	Baltimore, Md.
Kirschbaum, Edw. H.	Waterbury.	
Knowlton, Don J.	Greenwich.	
Kraus, Walter M.	Stamford.	
LaMoure, Charles T.	Salisbury	Lakeville.

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Name.	Where Registered.	P. O. Address.
Lamy, Edgar D.	New Haven.	
Landry, Arthur B.	Hartford.	
Lawless, Robert F.	Stamford.	
Levine, Sinclair C.	Hartford.	
Levy, William	New Haven.	
Licht, William H.	Pomfret.	
Little, Herman C.	Stonington.	
Locke, Harry L. F.	Hartford.	
Lynch, James F.	Hartford.	
Manship, Frances P.	Suffield.	
McElman, Harry W.	Meriden.	
Metcalf, Eliot H.	Vernon	Rockville.
Monaghan, William A.	Hartford.	
Moody, Ray W.	Plainville.	
Mouradian, Marian G.	Enfield	Thompsonville.
Mumford, John F.	Waterbury.	
O'Brien, William H. J.	New Haven.	
Owen, Arthur K.	New Haven.	
Paul, Voyle A.	New Haven.	
Pedrick, Franklin B.	Norwich.	
Phelps, Stuart E.	Farmington.	
Pillsbury, Arthur R.	Vernon	Rockville.
Projector, Harry	Stamford.	
Prout, Edgar B.	Middletown.	
Quinn, Raymond J.	Waterbury.	
Reshower, Isidor C.	Bridgeport.	
Riordan, Michael D.	Waterbury.	
Rogers, Platt H.	New Haven.	
Rosenthal, Isador	Norwalk	South Norwalk.
Russell, Donald G.	New Haven.	
Russell, Evans D.	Roxbury.	
Ryder, Raymond H.	Waterbury.	
Sagarino, John F.	Hartford.	
Scholl, Robert F.	New Haven.	
Segnalla, Ernest	New Haven.	
Seymour, Bina	Enfield	Springfield, Mass.
Skladzien, Thaddeus S.	Meriden.	
Smirnow, Max R.	New Haven.	
Smith, Fred M.	Stamford.	
Souder, Charles F.	Norwich.	
Souther, Robert F.	Thompson	Boston, Mass.
Stilphen, Harry L.	Darien.	
Sullivan, Cornelius F.	Huntington.	
Sweet, Grover C.	New Haven.	
Sweet, John H. T., Jr.	Hartford.	
Tanner, Warren A.	Brooklyn.	

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Name.	Where Registered.	P. O. Address.
Taylor, Dennis E. G.	Stonington.	
Thompson, David C.	Stratford.	
Tytler, James E.	Greenwich	New York City.
Vastola, Anthony P.	Waterbury.	
Walsh, William T.	Stamford.	
Watts, Joseph F.	Waterbury.	
Weed, Arthur R.	Greenwich	New York City.
Weldon, Edwin B.	Bridgeport.	
Wells, Donald B.	Hartford.	
White, George S.	Danbury.	
White, Ralph L.	Stamford.	
Wilson, Ross M.	Greenwich	New York City.
Woodward, Esther S. B.	Norwich.	
Woodward, Harold B.	Salisbury	Albion, N. Y.
Woodward, Vernie E.	Hartford.	
Wright, Arthur B.	Hartford.	
Young, Franklin C.	Wethersfield.	

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LIST OF MIDWIVES

WHO HAVE BEEN LICENSED AND REGISTERED IN THE OFFICE OF THE STATE BOARD OF HEALTH BETWEEN OCTOBER 1, 1912, AND OCTOBER 1, 1914.

When no Post Office address is given, it is understood to be the place registered.

Name.	Where Registered.	P. O. Address.
Armusiewicz, Anna	Enfield	Chicopee Falls, Mass.
Baker, Anna	Danbury.	
Blasko, Emma	New Britain.	
Boggia, Nettie	Waterbury.	
Carelli, Genesio	New Haven.	
Chillino, Giovina	Bridgeport.	
Cierpisz, Maryanna	Hartford.	
Colasanto, Marie V.	Waterbury.	
Domizi, Clorinda	New Haven.	
Dougeneck, Catherine	Bristol.	
Firrtz, Mary	Norwalk	South Norwalk.
Ignath, Julianna	Bridgeport.	
Kovacs, Anna	Bridgeport.	
Marini, Marianna	New Haven.	
Mastrangelo, Maria	Bridgeport.	
Paulopoulow, Mary	Bridgeport.	
Radom, Fanny	New Britain.	
Rossitto, Itria	Bridgeport.	
Sodergren, Augusta	New Britain.	
Strammeiello, Faustina	Hartford.	
Sullo, Filomena	New Haven.	
Swienton, Anna	Meriden.	
Szcepkowska, Wladyslawa	Plymouth	Terryville.

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TREASURER'S REPORT

(Verified by vouchers on file in Comptroller's office.)

The Treasurer herewith submits the following statement of money received from the Comptroller on account of the State Board of Health.

GENERAL EXPENSE ACCOUNT.

From October 1, 1912, to October 1, 1913.

RECEIPTS.

1912.			
Oct.	1.	By balance from last account	$57 24
Oct.	30.	By cash from Comptroller	1,250 00
Dec.	30.	By cash from Comptroller	1,250 00
1913.			
April	29.	By cash from Comptroller	1,250 00
July	30.	By cash from Comptroller	1,250 00
		Salary of Secretary	3,000 00
			$8,057 24

DISBURSEMENTS.

For traveling and other necessary expenses of members of Board when on duty	$362 33
Books and subscriptions to sanitary literature	53 50
Printing and stationery	1,745 55
Library Bureau, copy and index cards	321 60
Clerical expenses in Secretary's office	2,055 00
Postage	176 00
Express and cartage	50 98
Miscellaneous items	55 35
Sanitary inspections, Mr. Ham	143 48
Telephone, long distance tolls	32 95
Legislative bills	18 60
Conference State Boards of Health	10 00
Addessograph Plates	15 56
Salary of Secretary	3,000 00
	$8,041 90
To balance paid into Treasury	15 34
	$8,057 24

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From October 1, 1913, to October 1, 1914.

RECEIPTS.

1913.			
Oct.	30.	By cash from Comptroller	$1,250 00
1914.			
Feb.	3.	By cash from Comptroller	1,250 00
June	5.	By cash from Comptroller	1,250 00
Sept.	8.	By cash from Comptroller	1,250 00
		Salary of Secretary	3,000 00
			$8,000 00

DISBURSEMENTS.

For traveling and other necessary expenses of members of the Board when on duty	$346 14
Books and subscriptions to sanitary literature	32 80
Printing and stationery	1,812 41
Library Bureau, copy and index cards	348 27
Clerical expenses in Secretary's office	2,100 00
Postage	116 50
Express and cartage	37 23
Sanitary inspections, Mr. Ham	36 47
Telephone, long distance tolls	32 30
Conference, State Boards of Health	10 00
Addressograph plates	6 87
Expert services	10 00
Stenographer at Health conference, Mr. Roberts	19 90
Salary of Secretary	3,000 00
	$7,908 89
To balance	91 11
	$8,000 00

LABORATORY ACCOUNT.

FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1913.

RECEIPTS.

1912.			
Oct.	1.	Cash on hand	$292 39
Oct.	3.	Cash from Comptroller	2,000 00
Dec.	30.	Cash from Comptroller	2,000 00
1913.			
April	29.	Cash from Comptroller	2,000 00
July	30.	Cash from Comptroller	2,000 00
			$8,292 39

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DISBURSEMENTS.

Salaries	$5,482 15
Labor	547 88
Postage	371 50
Express	110 35
Traveling expenses	329 78
Gas and electricity	154 12
Telephone	91 25
Printing	155 70
Ice	69 00
New equipment, chemicals, mailing outfits, etc.	980 66
	$8,292 39

For the fiscal year ending September 30, 1914.

RECEIPTS.

1913.			
Oct.	30.	Cash from Comptroller	$2,225 00
1914.			
Feb.	3.	Cash from Comptroller	2,225 00
June	5.	Cash from Comptroller	2,225 00
Sept.	8.	Cash from Comptroller	2,225 00
			$9,000 00

DISBURSEMENTS.

Salaries	$4,587 78
Labor	453 00
Postage	233 87
Express	168 29
Traveling expenses	14 35
Gas and electricity	96 50
Telephone	90 36
Printing	158 47
Ice	62 00
Insurance	15 80
Special investigation, pollution of streams	725 79
New equipment, chemicals, mailing outfits, etc.	665 19
	$7,271 40
Cash to balance	1,728 60
	$9,000 00

ANTITOXIN ACCOUNT.

Paid The H. K. Mulford Co., Philadelphia, for antitoxins during the year ending Sept. 30, 1913	$7,085 70
Paid Schiefflin & Co., New York, for antitoxins during the year ending Sept. 30, 1914	$10,812 05

Attest:

JOSEPH H. TOWNSEND, M. D.,

Treasurer.

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PUBLIC HEALTH LEGISLATION IN CONNECTICUT IN 1913.

During the legislative session of 1913, the following Acts relating to public health and safety were passed.

CHAPTER 5.

An Act concerning the Furnishing of Food in Saloons.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Any person holding a license for the sale of spirituous and intoxicating liquors who shall, by himself, his agent, or servant, furnish or supply without charge therefor, or have on hand for free distribution, any article of food in such licensed place, shall be subject to the penalties of section 2712 of the general statutes.

Approved, April 8, 1913.

CHAPTER 14.

An Act concerning Reports of Occupational Diseases.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Every physician having knowledge of any person whom he believes to be suffering from poisoning from lead, phosphorus, arsenic, brass, wood-alcohol, mercury, or their compounds, or from anthrax, or from compressed-air illness, or any other disease, contracted as a result of the nature of the employment of such person, shall, within forty-eight hours, mail to the commissioner of the bureau of labor statistics a report stating the name, address, and occupation of such patient, the name, address, and business of his employer, the nature of the disease, and such other information as may reasonably be required by said commissioner. The commissioner of the bureau of labor statistics shall prepare and furnish to the physicians of this state suitable blanks for the reports herein required.

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SEC. 2. No report made pursuant to the provisions of this act shall be evidence of the facts therein stated in any action at law against any employer of such diseased person.

SEC. 3. Any physician who shall neglect or refuse to send any report herein required, or who shall fail to send the same within the time specified in this act, shall be liable to the state for a penalty of not more than ten dollars, recoverable by civil action in the name of the state by the commissioner of the bureau of labor statistics.

Approved, April 22, 1913.

CHAPTER 17.

An Act amending an Act concerning the Adulteration, Inspection, and Sale of Milk.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section one of chapter 143 of the public acts of 1907 as amended by section one of chapter 221 of the public acts of 1911 is hereby amended to read as follows: Any milk which is sold or exchanged, or offered for sale or exchange, shall be deemed to be sold, exchanged, or offered as of standard quality, unless otherwise expressly stated at the time of such sale, exchange, or offer. Milk of standard quality shall contain not more than eighty-eight and one-quarter per centum of watery fluid, not less than eleven and three-quarters per centum of milk solids, not less than eight and one-half per centum of solids not fat, and not less than three and one-quarter per centum of milk fats; and the certificate of the director of the Connecticut agricultural experiment station or the director of the laboratory of the state board of health shall be *prima facie* proof of the composition of any milk.

Approved, April 22, 1913.

CHAPTER 23.

An Act amending an Act concerning Tenement Houses.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Section one of chapter 241 of the public acts of 1911 is hereby amended to read as follows: This act may be cited as the tenement house act, and its provisions shall apply to all cities, boroughs, and towns, except its provisions concerning water-closets, which provisions shall apply to all cities, boroughs, and towns which have a water supply and a sewer system.

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SEC. 2. Section fifteen of said act is hereby amended to read as follows: In every tenement house hereafter erected every room, except water-closet compartments and bathrooms, shall have at least one window opening directly upon the street or upon a yard or court of the same lot, of the dimensions specified in sections four to thirteen, inclusive of this act; and such windows shall be so located as to properly light all portions of such rooms, and shall have a total area in each room of at least one-eighth of the area of the floor of the room. The requirements of this section in respect to rooms in a tenement house shall apply to all sleeping rooms in every building hereafter erected for use as a hotel or dormitory.

SEC. 3. Section twenty-nine of said act is hereby amended to read as follows: It shall be the duty of every inspector of buildings, fire marshal, or other person authorized to issue building permits, by whatever name known, to enforce the provisions of this act, and to report all violations thereof to the proper prosecuting officer. Where no other officer is authorized to issue building permits, the health officer of every town shall be charged with the duties assignd by this act to building inspectors.

SEC. 4. Section thirty of said act is hereby amended to read as follows: Every owner or lessee of any building which was not used as a tenement house prior to the passage of this act who shall allow such building to be occupied or used as a tenement house without making such building conform in all respects with the requirements of this act, and every owner or lessee of land, and every builder or architect, who shall authorize, make, or approve any construction or alteration of any building, or any reduction in court or yard spaces, in violation of the provisions of this act, shall be fined not less than twenty-five dollars nor more than five hundred dollars, and if any violation of any of said provisions remains uncorrected, the violator shall be subject to a renewal of the foregoing penalty every thirty days until the violation is corrected.

SEC. 5. Section thirty-one of said act is hereby amended to read as follows: It shall be the duty of the commissioner of labor statistics to collect, keep on file in his office, and at his discretion publish data to be furnished by the officers charged in the several cities, boroughs, and towns with the execution of this act, showing the number of tenement houses for which permits have been asked, the number of plans approved, disapproved, or modified, and any other facts concerning the operation of the law. The records and files of said officers shall at all times be open to the commissioner of labor statistics for the purposes provided herein. Printed copies of this act and blank forms needed to carry out the provisions of this section and of section twenty-six of this

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act shall be supplied by the commissioner of the bureau of labor statistics to the officers charged with the enforcement of this act.

Approved, April 24, 1913.

CHAPTER 29.

An Act amending an Act concerning Sanitary Conditions in Tenement, Lodging, and Boarding Houses.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Section three of chapter 220 of the public acts of 1911 is hereby amended to read as follows: Every building used as a tenement, lodging, or boarding house, and all parts thereof, shall be kept in good repair, and the roofs shall be so kept as not to leak and all rain water shall be so drained and conveyed therefrom as to prevent its dripping onto the ground or causing dampness in the walls, ceilings, yards, or areas.

SEC. 2. Section four of said act is hereby amended to read as follows: No horse, cow, calf, swine, poultry, sheep, or goat shall be kept in or near any tenement, lodging, or boarding house unless stabled at least twenty feet distant from such tenement, lodging, or boarding house, and then only when such stabling is not detrimental to health, in the opinion of the board of health. No tenement, lodging, or boarding house, or any part thereof, shall be used for the handling, keeping, or storing of combustible articles or rags, or any other articles, in a manner deemed by the board of health to be dangerous or detrimental to health.

SEC. 3. Section five of said act is hereby amended to read as follows: Whenever any tenement, lodging, or boarding house, or any building, structure, excavation, business pursuit, matter, or thing in or about such house or the lot on which it is situated, or the plumbing, sewerage, drainage, light, or ventilation of such house, is, in the opinion of the board of health, in a condition which is, or in its effect is, dangerous or detrimental to life or health, said board may declare that the same, to the extent specified by said board, is a public nuisance, and may order the same to be removed, abated, suspended, altered, or otherwise improved or purified, as the order shall specify. The board of health may also order or cause any tenement house, or part thereof, or any excavation, building, structure, sewer, plumbing pipe, passage, premises, ground, matter, or thing in or about a tenement, lodging, or boarding house or the lot on which such house is situated, to be purified, cleansed, disinfected, removed, altered, repaired, or improved. If any order of the board of health is not complied with, or so far complied with as said board shall regard as reasonable, within five days after the service thereof, or within such

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shorter time as said board shall designate, then such order may be executed by such board, through its officers, agents, employees, or contractors, and the expense thereof shall be collected from the owner by an action in the name of the city, borough, or town.

SEC. 4. Section nine of said act is hereby amended to read as follows: Every building used as a tenement, lodging, or boarding house shall be furnished with adequate and suitable privy vaults or water-closets. There shall be at least one such closet or vault for every two apartments of three rooms, or less, each, and one such closet or vault for every apartment of four or more rooms. Every tenement, boarding, or lodging house located on premises abutting on any street or alley where running water is available and through which there is a sewer with which connection may be had shall be provided with water-closets connected with such sewer, and each such water-closet shall be located on the same floor as the apartment which it serves. Every bath-room or water-closet compartment in a tenement, lodging, or boarding house shall be ventilated by a freely opening window of at least three square feet in area, opening to the outer air or upon a vent shaft having such openings at the bottom and top as meet the approval of the board of health, or by a separate ventilating flue, of non-corroding material and at least thirty-six square inches in area, leading directly to the roof; and every such bath-room or water-closet compartment, not otherwise sufficiently lighted, shall be provided with light from an adjoining room or rooms by means of translucent glass, of adequate size in a fixed sash.

SEC. 5. Section ten of said act is hereby amended to read as follows: Dark and poorly ventilated public halls in tenement, lodging, or boarding houses, shall be remedied in such manner as is deemed practicable and ordered by the board of health. The owner of every tenement house shall provide for the lighting of all public halls at night. No room in a tenement, lodging, or boarding house shall be used as a sleeping room unless it has an outside window or is provided with a sash window of at least eight square feet opening into an adjoining room, in the same apartment, having an outside window, which sash window shall be a vertically sliding, pulley-hung sash, both halves of which shall be so constructed as to open readily, and the lower half shall be glazed with translucent glass. The walls of any court, shaft, hall, or room shall be whitewashed or painted a light color whenever, in the opinion of the board of health, such whitewashing or painting is needed for the better lighting of any room, hall, or water-closet compartment.

SEC. 6. Section eleven of said act is hereby amended to read as follows: It shall be the duty of the board of health of each city, borough, or town to enforce the provisions of this act and

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such board of health is hereby given authority for such purpose. All duties imposed and powers conferred by this act upon boards of health shall devolve upon the health authority of each city, borough, or town by whatever name such health authority may be known. Nothing in this act shall be construed to abrogate or impair the powers of a local board of health, or of the courts, or any other lawful authority, to enforce any provisions of any city or borough charter or health ordinances and regulations not inconsistent with this act, or to prevent or punish violations thereof.

SEC. 7. Section twelve of said act is hereby amended to read as follows: Every person who shall violate or assist in violating, or shall fail to comply with, any of the provisions of this act or any legal order of a board of health made under any of such provisions shall be fined not more than two hundred dollars, or imprisoned not more than sixty days, or both; and every person who shall continue to violate or assist in violating, or who shall continue to fail or refuse to comply with, any of the provisions of this act after having been convicted of violating or assisting in violating any of said provisions, or of failing to comply therewith, shall, upon a subsequent conviction, be imprisoned not more than six months. The county health officer of the county or the prosecuting authorities of the city, borough, or town shall have power to prosecute for any such offense.

Approved, April 24, 1913.

CHAPTER 40.

An Act concerning Fire Escapes on Public School Buildings.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Every building used as a schoolhouse, which is two or more stories in height, and in which the greatest elevation of the floor of any story actually used or occupied by pupils is ten feet or more above the adjoining ground at any accessible door, window, or other suitable place of exit, shall be provided with at least one adequate fire escape, of iron or other incombustibl material, securely erected on the outside of said building, for each two hundred and fifty pupils, or fractional part thereof; and such fire escapes shall, at all times, be kept free from obstructions, shall be so designed as to prevent persons from being pushed off or falling from same, shall be conveniently accessible to and from each floor of ten or more feet above the adjoining ground of said building, shall be of sufficient width and strength at all parts so that the same may be crowded from top to bottom with adult persons descending two abreast, and the exits of each floor to same shall

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consist of doorways whose base shall be level both with the floor of said building and the landing of the fire escape to which it leads. Said doorways shall not be less than three feet wide nor seven feet high, and shall be closed by double doors hinged at the sides to swing outward, arranged so as to be readily and quickly opened from the inside and shall have clear glass panels or sashes extending from not more than eight inches from the top to not more than two feet from the bottom of each door; and the landing of the fire escape at each floor, if there be two or more separate rooms or hallways adjoining each other and convenient to said landing, shall have two or more doorways leading to it, each doorway to be from a separate room or hall. The provisions of this section shall not apply to two-story buildings with fireproof halls and two or more exits on the ground floor opening out.

SEC. 2. The chief of the fire department of any city or borough and the state board of education shall have power to enforce the provisions of this act, and it shall be the duty of said official and said board, acting either conjointly or singly, immediately upon its passage, to forthwith order the proper school authorities to place, on all schoolhouses or buildings used as schoolhouses to which the provisions of this act are applicable, such number of fire escapes as will equip said buildings in accordance with the provisions hereof.

SEC. 3. The chief of the fire department of any town, city, borough, or fire district, or, if there be no such chief, the principal or superintendent of any school, with the approval of any agent of the state board of education, may exempt any school building, which has two or more ways of egress by stairways on the inside, from the provisions of this act.

SEC. 4. Any school building which is not equipped with fire escapes in accordance with the provisions of this act within sixty days after notice given as provided in section two shall be condemned by the official giving such notice, and shall not thereafter be used for school purposes until the provisions of this act have been complied with. In case any such building is used for school purposes after being so condemned the officials in charge of such building shall be subject to the penalty provided in section 2633 of the general statutes, and the town in which such building is so used shall forfeit the state enumeration grant during the time such building is so used. The officials making such order may cause fire escapes to be erected on such school buildings in accordance with the provisions of this act, and the cost thereof shall be paid by the town.

SEC. 5. All acts or parts of acts inconsistent herewith are hereby repealed.

SEC. 6. This act shall take effect from its passage.

Approved, May 2, 1913.

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CHAPTER 59.

An Act amending an Act concerning Bake Shops.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 2569 of the general statutes as amended by section one of chapter 13 of the public acts of 1905 and by chapter 147 of the public acts of 1909 is hereby amended by adding at the end thereof the following: "This act shall not prevent local health authorities from enforcing orders or regulations concerning the sanitary conditions of bakeries."

Approved, May 7, 1913.

CHAPTER 81.

An Act amending an Act concerning Fire Escapes.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 2629 of the general statutes as amended by section two of chapter 239 of the public acts of 1911 is hereby amended by striking out the word "hotel" in the second line thereof and by adding at the end of said section the following: "Any hotel, or other building connected therewith, which is more than two stories in height and contains sleeping accommodations for more than ten persons, shall be provided witth one such fire escape for each one hundred and fifty running feet, or fractional part thereof exceeding fifty feet, in the perimeter of such hotel or other building," so that said section as amended shall read as follows: If any building specified in section 2628, or any workshop, manufactory, boarding house, tenement house, or other building used, in whole or in part, for any of the purposes therein specified, or in which more than six persons shall be employed above the third story, shall be more than three stories in height, it shall be provided with at least one fire escape, of iron or other incombustible material, on the outside of said building; and if such building shall be more than one hundred and fifty feet in length it shall be provided with one such fire escape for every one hundred and fifty feet, or fractional part thereof exceeding fifty feet, and such fire escape shall be conveniently accessible from each story of said building; and if such building be a tenement house the fire escapes shall be directly accessible from each apartment, without passing through any public hall. Any hotel, or other building connected therewith, which is more than two stories in height and contains sleeping accommodations for more than ten persons, shall be provided with one such

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fire escape for each one hundred and fifty running feet, or fractional part thereof exceeding fifty feet, in the perimeter of such hotel or other building.

Approved, May 20, 1913.

CHAPTER 105.

An Act concerning the Sale of Eggs.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Every person, firm, or corporation who shall sell or offer for sale any eggs which have been preserved by any artificial process, or which have been kept in storage for more than fifteen days, in any place where the temperature is reduced by means of chemicals or other agents, or which have been incubated for twenty-four hours or more, shall affix to the package or receptacle containing such eggs, and the package or receptacle in which they are delivered, conspicuously displayed with such eggs a label or placard bearing in plain letters not less than one inch in height, the words "cold storage eggs," or "preserved eggs," or "incubated eggs," as the case may be.

SEC. 2. No eggs shall be brought into this state that have been held in cold storage, or preserved by any process, or incubated, unless the package containing said eggs shall be marked or labeled in accordance with the provisions of this act.

SEC. 3. Any person who shall fail to comply with the provisions of this act, or who shall knowingly misrepresent the condition or quality of any eggs which have been kept in cold storage, preserved, or incubated, shall be fined not more than twenty-five dollars.

SEC. 4. The dairy and food commissioner shall have the same powers with respect to the detection and prosecution of any unlawful sales of cold storage, preserved, or incubated eggs under the provisions of this act as are now conferred upon him with reference to the sale of butter, vinegar, or other food products.

Approved, May 26, 1913.

CHAPTER 112.

An Act concerning the Employment of Women.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. It shall be unlawful for the owner, proprietor, manager, foreman, or other person in authority, of any factory, mercantile establishment, mill, or workshop knowingly to employ

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a woman or permit a woman to be employed therein within four weks previous to confinement or four weeks after she has given birth to a child.

SEC. 2. Any person who shall violate any provision of this act shall be fined not more than twenty-five dollars, or imprisoned not more than thirty days, or both.

Approved, May 26, 1913.

CHAPTER 126.

An Act concerning the Bottling and Sale of Drinking Water.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Before any person shall engage in the business of bottling and selling spring water or other drinking water he shall apply to the state board of health for a license stating the location of the spring or other source from which water is to be taken and sold, and the location of the premises where such business is to be conducted. Said board shall cause an examination of the water to be made, and if it finds the same to be free from contamination and the premises where bottling is to be done in a sanitary condition, with the proper facilities for cleansing and sterilizing all bottles to be filled, it may grant a license for one year to the person making such application, upon payment of a license fee of ten dollars. Such license may be renewed annually upon payment of said fee. Said board may revoke such license at any time that examination shows the water to be sold by any licensee to be polluted, or the premises where the business of bottling is carried on to be in an unsanitary condition.

SEC. 2. All license fees collected by the state board of health under the provisions of this act shall be paid to the state treasurer annually.

SEC. 3. The sum of one thousand dollars, or so much thereof as may be necessary, is hereby appropriated to defray the expense of the inspecting and licensing provided for in this act, and the comptroller is hereby directed to draw his order on the treasurer for the amount of such expense on vouchers approved by the secretary of the state board of health.

SEC. 4. No person shall place any offal, garbage, kerosene, or other foul substance in any bottle, jar, or cask used as a receptacle for drinking water.

SEC. 5. Any person who shall violate any of the provisions of this act shall be fined not more than one hundred dollars, or imprisoned not more than thirty days, or both.

Approved, May 27, 1913.

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CHAPTER 143.

An Act concerning Public Health and the Control of Mosquito Breeding Places.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Any accumulation of water in which mosquitoes are breeding is hereby declared to be a public nuisance.

SEC. 2. When it has been brought to the attention of a health officer or board of health, through the complaint of any citizen, or when discovered by any inspector or agent of said health officer or board of health, that rain water barrels, tin cans, bottles or other receptacles, or pools near human habitations are breeding mosquitoes, it shall be the duty of said health officer or board of health to investigate and to cause such breeding places to be abolished, screened, or treated in such manner as to prevent the breeding of mosquitoes. The health officer, or any inspector or agent employed by him, shall have the right to enter any premises in performance of his duties under this act.

Approved, May 29, 1913.

CHAPTER 177.

An Act amending an Act concerning Licenses and Examinations for the Practice of Osteopathy.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

Section 4738 of the general statutes is hereby amended to read as follows: No person shall engage in the practice of osteopathy in this state unless such person shall have obtained from said board a license. All applications for such license shall be in writing and signed by the applicant, upon blanks furnished by said board, setting forth such facts concerning the applicant as said board shall require, and no license shall be granted to any person unless he shall have received a certificate of graduation from some reputable college of osteopathy, duly recognized by the laws of the state wherein the same is situated, having a course of instruction which covers three college years of nine months each, or unless he shall have been actually engaged in the practice of osteopathy in this state on June 17, 1901. Any person who, at said date, was actually engaged in the practice of osteopathy in this state, shall be entitled to receive such license upon making application to the board as provided in this section and paying a fee of two dollars. Any person who shall desire to commence the practice of osteopathy in this state shall make applica-

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tion to the board as provided in this section. Upon receipt of such application, said board shall require the applicant to submit to an examination as to his qualifications for such practice, which examination shall include the subjects of anatomy, physiology, pathology, gynecology, obstetrics, chemistry, toxicology, hygiene, public health, and dietetics, and the principles and practice of osteopathy, and such other branches as are taught in well-regulated and recognized school of osteopathy and deemed advisable by said board. If such examination shall be passed to the satisfaction of the board, it shall issue its license to said applicant. A license may be granted without such examination to any person who has been in active and continuous practice of osteopathy for three successive years in any other state, who shall satisfy the board as to his fitness to engage in such practice.

Approved, June 6, 1913.

CHAPTER 186.

An Act concerning Marriage Licenses.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. No persons shall be married until one of them shall under oath inform the registrar of births, marriages, and deaths of the town in which the marriage is to be celebrated, the name, age, color, occupation, birthplace, residence, and condition, whether single, widowed, or divorced, of each. If either of such persons is a resident of said town such registrar shall issue his certificate that the parties therein named have complied with the provisions of this act. If neither of such persons is a resident of said town said registrar shall not issue such certificate until the fifth day following unless the judge of probate for the district in which the intended marriage is to be celebrated, or the person who is to join said parties in marriage, after hearing such evidence as is presented, renders a written decision that, in his opinion, public policy, or the physical condition of one of the parties, requires the intended marriage to be celebrated without delay. Upon receipt of such decision said registrar shall file the same as a public document, and shall immediately issue his certificate that the parties therein named have complied with the provisions of this act. A certificate when issued as aforesaid shall be a license for any person authorized to celebrate marriage, to join in marriage, within said town only, the parties therein named, but no such certificate shall be issued if either of the parties is a minor until a parent or guardian having control of such minor shall give to the registrar his written consent. In the case

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of a minor having no parent or guardian who is a resident of the United States, the consent of the first selectman of the town where such minor has last resided for the period of six months shall be sufficient. Any registrar who shall issue such certificate before the expiration of the period hereinbefore specified or who shall knowingly issue such certificate without such consent shall be fined not more than one hundred dollars, and every person who shall join any persons in marriage without having received such certificate shall be fined not more than one hundred dollars.

SEC. 2. Section 4535 of the general statutes is hereby repealed.

Approved, June 6, 1913.

CHAPTER 189.

An Act concerning the Practice of Midwifery.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. The Connecticut medical examining board, the Connecticut homeopathic medical examining board, and the Connecticut eclectic medical examining board each shall in August, 1913, and quadrennially thereafter present to the state board of health the names of one or more physicians from which nominations said state board of health shall appoint three physicians, who shall constitute a board of examiners who shall examine applicants for a certificate to practice midwifery. Each member of said board so appointed shall serve for a term of four years, and any vacancy occurring may be filled by the state board of health for the unexpired portion of the term. Said board shall be known as the Connecticut board of examiners of midwives, and no person shall practice midwifery until she has obtained a certificate of registration from said board as provided in this act.

SEC. 2. No person shall obtain a certificate of registration entitling her to practice midwifery until she has passed an examination as required by said board of examiners of midwifery, and shall have filed with the state board of health duplicate certificates to that effect, signed by a majority of said board, nor until she has filed with the state board of health duplicate statements subscribed and sworn to by her upon blanks furnished by the state board of health, stating her name, age, place of birth, and residence, and the school of midwifery of which she is a graduate, with such other information as shall be required by said board of health.

SEC. 3. No person shall be eligible to take such examination until she shall present to said examining board a certificate, signed by two reputable citizens of this state, stating that she is of good

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moral character and a resident of this state, or intends in good faith to become a resident thereof.

SEC. 4. The fee for examination by this board shall be fifteen dollars.

SEC. 5. Any person taking such examination shall file with the state board of health the certificates herein provided for and, upon payment of two dollars, the state board of health shall issue a certificate of registration, which shall state that the person named therein has been found qualified to practice midwifery. Said examining board shall file with the state board of health within thirty days after each examination a list of all applicants examined thereat, stating which applicants passed such examination.

SEC. 6. Said examining board shall hold examinations on the second Tuesday of March, July and November of each year, at such place as they may designate, and at such other times and places as they shall determine. Said board shall conduct its examinations in writing, but examination may be in the language of the applicant if the applicant furnishes an interpreter acceptable to the board. Questions and answers shall be filed with and preserved for at least six years by said state board of health.

SEC. 7. Upon receipt of any duplicate statements as provided in this act the state board of health shall transmit one of said statements with a duplicate certificate of registration to the town clerk of the town wherein the person so filing said statement resides, and said town clerk shall record the same in a book to be provided by the state board of health for that purpose and shall return said certificate to the person who filed it. The town clerk shall receive for such recording a fee of twenty-five cents to be paid by the state board of health out of the moneys paid to it as aforesaid.

SEC. 8. Any person who shall violate any provision of this act shall be fined not more than one hundred dollars, or imprisoned not more than six months, or both, and the state board of health may revoke the license issued to any person convicted of a felony, or of unprofessional conduct, or of any ocense punishable by imprisonment in the state prison, or on the application of all the members of said examining board.

Approved, June 6, 1913.

CHAPTER 191.

An Act concerning the Sale of Narcotic Drugs.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. No person shall sell, furnish, or give away, except to a licensed physician, pharmacist, dentist, or veterinarian

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in the manner hereinafter privided, any cocaine, salts of cocaine, or any preparation containing cocaine or salts of cocaine, eucaine or its salts, or heroin or diacetyl morphine and its salts, or dionin or ethyl morphine or any of its salts or derivations, or morphine or any derivation thereof, or any gum or natural opium except in a form adapted to external use only, or in preparations containing not more than one-half grain of morphine or not more than one-half grain of heroin in one fluid ounce, or if a solid preparation, in one avoirdupois ounce, except upon the receipt of a prescription properly written and signed by a licensed physician, and only within five days after the date of such prescription. Every such prescription shall be retained by the person who dispenses the same and shall be filled but once, and shall be kept in a separate file or book; and said person shall enter in a book kept for that purpose, the date of the sale, the name and address of the purchaser, and the name of the person making such sale. Such prescription shall contain the date of its issue, the name of the person to whom it is issued, and the prescription in full.

SEC. 2. No person shall sell to any pharmacist, physician, dentist, or veterinarian, any of the preparations referred to in section one of this act except upon receipt of a written order therefor which shall contain the date, the name and quantity of the artidesired, and the name of the person to whom the article is sold, and said order shall be retained in a separate file or book by the person dispensing the same.

SEC. 3. Every person who shall sell any of the drugs mentioned in section one upon the orders provided for in section two shall file with the commissioners of pharmacy, on or before the tenth day of each month, a report showing all such sales made during the preceding month, provided licensed pharmacists making sales to licensed physicians, dentists, or veterinarians only shall not be required to make such report.

SEC. 4. The commissioners of pharmacy shall prepare and furnish to all local boards of health and health officers, official order blanks, serially numbered, with stubs attached, in book form, upon which blanks shall be written in ink orders for the purchase of any of the drugs mentioned in this act by any physician, pharmacist, dentist, or veterinarian, and such orders shall be furnished, by said boards of health and health officers, to any licensed physician, pharmacist, dentist, or veterinarian.

SEC. 5. No person shall copy the original prescription or order written by any person authorized to issue the same, in accordance with the provisions of this act, or use a copy of the original prescription or order for the purpose of obtaining any of the drugs mentioned in this act, and no prescription shall be refilled except upon an order written upon the original prescription by the physician who issued it.

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SEC. 6. All written orders and prescriptions required by this act and filed, in accordance with its provisions, with any person, jobber, wholesaler, or manufacturer shall be open to the inspection of all prosecuting authorities.

SEC. 7. No person not a licensed physician, dentist, jobber, wholesaler, manufacturer, or pharmacist shall have in his possession at any time more than five grains of any of the drugs mentioned in section one.

SEC. 8. Any person who shall violate any of the provisions of this act shall be fined not more than five hundred dollars, or imprisoned not more than one year, or both.

SEC. 9. The commissioners of pharmacy, in making payments to the treasurer of the state, as provided by section fifteen of chapter 216 of the public acts of 1909, are hereby authorized to retain in the hands of the treasurer of said commission a balance not exceeding five hundred dollars as a reserve fund for the purpose of defraying expenses.

SEC. 10. Chapter 127 of the public acts of 1905 and chapter 30 of the public acts of 1909 are hereby repealed.

SEC. 11. This act shall take effect from its passage.

Approved, June 6, 1913.

CHAPTER 208.

An Act concerning the Employment of Minors and Women.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Every employer whose business requires the operation or use of any emery, tripoli, rouge, corundum, stone, carborundum, or other abrasive, polishing, or buffing wheel, in the manufacture of articles of metal or iridium or whose business includes any process which generates an excessive amount of dust shall install and maintain in connection therewith such devices as may be considered necessary by the factory inspector and state board of health to remove from the atmosphere any dust created by such process. The factory inspector, with the state board of health, shall issue to any employer engaged in such business any orders necessary to render effective the foregoing provision, and if within sixty days from the issuance of such order stating the changes to be made, such order shall not be complied with, the factory inspector may order such department closed until such order is complied with.

SEC. 2. The violation of any provision of the foregoing section or the failure to comply with any written order issued in accordance therewith within sixty days thereafter shall constitute a misdemeanor punishable by a fine of not more than five hundred

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dollars for each offense, and every such order shall be enforceable by the superior court or by a judge thereof if said court is not in session, by injunction on application of the factory inspector or of the state board of health.

SEC. 3. Section 4521 of the general statutes is hereby repealed.

Approved, June 6, 1913.

CHAPTER 214.

An Act concerning Slaughter Houses.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. No slaughter house or place where the business of slaughtering beef, poultry, or swine or preparing the same for market is carried on shall be maintained in any town, city, or borough except upon the written permission of the health officer or board of health of the town, city, or borough within which the same is located, which permission may be revoked at any time.

SEC. 2. Such board of health or health officer may prescribe such rules and regulations as said board or officer may judge necessary for the control and management of such houses or places and for the proper inspection of the food products slaughtered or prepared for market therein, and may enter into such houses or places for the purposes of inspection.

SEC. 3. Any person who shall violate any rule or regulation made by any board of health or health officer under authority of this act or who shall conduct a slaughter house without having such written permission shall be fined not more than one hundred dollars, or imprisoned not more than thirty days, or both.

SEC. 4. The legislative authorities of any city or borough are hereby authorized to establish and maintain a slaughter house or slaughter houses within their respective territorial limits.

Approved, June 6, 1913.

CHAPTER 220.

An Act concerning the Pollution of Waters.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. The state board of health shall have general oversight of all inland and tidal waters, including streams, lakes, and ponds used as sources of water supply, and all springs, streams, and water courses tributary thereto.

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SEC. 2. The state board of health shall investigate the subject of the pollution of waters within this state by sewage and other filth and recommend to the next general assembly such legislation as will lead to the termination of all such pollution.

Approved, June 5, 1913.

CHAPTER 236.

An Act concerning the Practice of Optometry.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. The practice of optometry is hereby defined to be the employment of any means other than drugs for the measurement of the power of vision and the adaptation of lenses for the aid thereof.

SEC. 2. There shall be an examining board to be known as the Connecticut state board of examiners in optometry, consisting of five regular optometrists, who shall have competent knowledge of the theoretical and practical science of optics, and shall have practiced optometry in this state for at least three years. Said board of examiners shall be appointed by the state board of health as hereinafter provided. At its regular meeting next preceding October 1, 1913, said state board of health shall appoint five members of said board of examiners to hold office as follows: Two for one year, two for two years, and one for three years, from October 1, 1913, and thereafter at its regular meeting next preceding October first, said state board of health shall appoint successors to those whose terms expire, as members of said board of examiners for terms of three years from October first following their appointments. Vacancies in said board of examiners shall be filled by the state board of health. The Connecticut state optical society may annually nominate to the state board of health eight optometrists for appointment on said board of examiners, and said state board of health may select said board of examiners from said nominees or otherwise, as it may deem for the best interest of the state. Members of said board of examiners shall be sworn to a faithful discharge of their duties, and shall file with the state board of health a certificate of the administration of such oath.

SEC. 3. Said board of examiners shall meet within thirty days after their appointment and at their first meeting and at the annual meeting on the second Tuesday in October thereafter shall choose one of their members as president, and one as secretary and treasurer. Said secretary and treasurer shall give a bond to the satisfaction of the comptroller. Said board shall make rules and regulations for its government in the transaction of its bus-

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iness, and each member thereof may administer oaths and take testimony when appointed to do so by the board concerning any matter within the jurisdiction of the board. A majority of said board shall constitute a quorum. Said board shall meet at least once in six months, the time and place of meeting to be designated by the president and secretary. The secretary shall keep a record of the proceedings of the board which shall at all reasonable times be open for inspection. The board shall annually, on or before the first day of October, make a report to the state board of health of its official acts and of its receipts and expenses, with such suggestions as it may deem advisable with reference to the matters committed to its charge. All receipts and fees received by said board of examiners under this act, except such as are retained by the board under the provisions of this section, shall be paid to the state treasurer, and account rendered to the comptroller semi-annually. There shall be retained by said board of examiners at the time of such accounting such amounts as are necessary to pay their necessary expenses as approved by the comptroller, including stationery and printing. Said board of examiners shall receive no compensation for its services.

SEC. 4. Every person before beginning to practice optometry in this state after January 1, 1914, except as hereinafter provided, shall present to said board evidence that he or she is more than twenty-one years of age, of good moral character, has a preliminary education equivalent to at least two years in high school, and has studied at least two years in a registered optometrist's office, or has graduated from a school or college of optometry recognized as efficient by the state board of examiners, and shall take an examination before said board in the theoretical, practical, and physiological science of optics, theoretical and practical optometry, and in the anatomy and physiology of the eye; and said board shall determine the qualifications of the applicant and if found satisfactory shall give a certificate to that effect. Said certificate shall not contain the word "Doctor" or its synonym. The times and places for examinations of applicants shall be determined by the board, and each applicant, before examination, shall pay to the board, the sum of ten dollars, and the further sum of five dollars upon the issuance of a certificate. Any applicant failing to pass a satisfactory examination shall be entitled to one re-examination after the expiration of one month and not later than six months, free of charge. For each subsequent examination a fee of five dollars shall be paid. Each applicant upon obtaining the certificate herein provided for shall file the same for record in the office of the secretary who shall cause the same to be recorded in a book for that purpose, and any such certificate not so filed within thirty days after its date shall be void.

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SEC. 5. Certificates without examination may be granted as follows: To every person who has been continuously engaged in the practice of optometry in this state for two years, or one year in this state and at least one year in some other state prior to the passage of this act, provided such person shall, not later than January 1, 1914, file an affidavit as to these qualifications with the board, and submit such other evidence as it may require, also to any person who has been registered as an optometrist in some other state under laws which in the opinion of the board maintain a standard substantially similar to the provisions of this act. Every person receiving such certificate shall pay therefore a fee of five dollars.

SEC. 6. Said board may adopt rules and by-laws with reference to the display of certificates, and the number of the same by the person thus licensed, and may revoke, suspend, and reissue such certificates for causes deemed by it sufficient, and may provide in its rules and by-laws for hearing with reference to all matters relating to the granting, revocation, or reissuing of such certificates. Duplicate certificates may be issued by the board upon proof of loss of the original certificate, for which a fee of one dollar shall be charged.

SEC. 7. The secretary shall keep accurate minutes of all the doings of the board and shall keep a record of all certificates issued, revoked, or reissued.

SEC. 8. After January 1, 1914, no person shall practice optometry in this state unless he has obtained a certificate under the provisions of this act; and any person thus practicing without such certificate shall for each offense be fined not more than one hundred dollars, or imprisoned not more than three years, or both.

SEC. 9. This act shall not be construed to apply to physicians and surgeons authorized to practice under the laws of the state, nor to any persons who sell spectacles or eyeglasses on prescription from any physician or duly certified optometrist, nor to dealers in spectacles or eyeglasses who neither profess to practice nor practice optometry.

SEC. 10. No person granted a certificate under the provisions of this act shall display or use the title "Doctor" or its synonym, either by way of prefix or otherwise. Any person violating the provisions hereof shall be subject to the penalties provided in section eight of this act.

Approved, June 4, 1913.

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CHAPTER 239.

An Act amending an Act concerning the Practice of Pharmacy.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

SECTION 1. Section twelve of chapter 216 of the public acts of 1909 is hereby amended to read as follows: Said commission shall have power to investigate all alleged violations of the pharmacy law and all laws relating to the dispensing or sale of drugs, medicines, intoxicating liquors under a druggist's license or poisons, or the practice of pharmacy, which may come to its notice, and when there appears reasonable cause therefor, and on reasonable notice to the person accused of such violation, to take and hear testimony with reference thereto; to bring the same to the notice of the proper prosecuting authorities, or said commission may further examine into all cases of alleged abuse, fraud, or violations of the laws relating to the sale of intoxicating liquors and incompetence and may suspend the license of any licensed pharmacist or assistant pharmacist, and may revoke the license of any person convicted of violating any provision of this act.

SEC. 2. Section sixteen of chapter 216 of the public acts of 1909 is hereby amended to read as follows: Nothing herein shall prevent a practicing physician from compounding or dispensing his own prescriptions; or prevent the sale of insecticides; or prevent the sale of patent or proprietary medicines which does not conflict with the act concerning the sale of narcotic drugs; or prevent the sale of any drugs, medicines, or poisons at wholesale; or prevent any person from becoming a partner in or the owner of a pharmacy conducted by a licensed pharmacist; or prevent any keeper of a country store from keeping for sale and selling such domestic remedies as are usually kept and sold in such stores, except the following: Opium, morphine, and all other derivatives of opium, preparations containing opium in excess of two grains per ounce or morphine in excess of one-fourth grain per ounce, carbolic acid stronger than ten per centum solution, prussic acid, oxalic acid, strychnine, arsenic, cyanide of potassium, chloral hydrate, chloroform, cobalt, sugar of lead, mercury in any form, belladonna and its preparations for internal use, and nux vomica and its preparations, provided such keeper shall not compound medicines and when sold in such stores all medical preparations recognized by the United States pharmacopeia and national formulary shall be of standard strength, and shall be prepared by a licensed pharmacist, and shall be sold only in original packages bearing the label of a licensed pharmacist.

Approved, June 5, 1913.

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